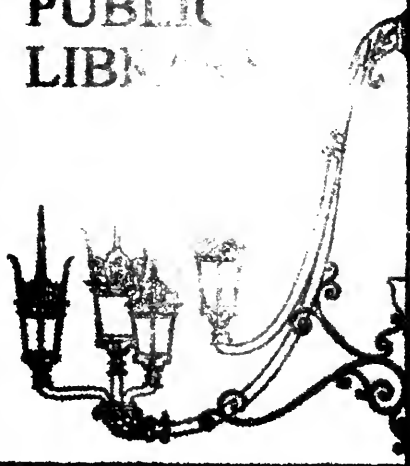


BOSTON PUBLIC LIBRARY

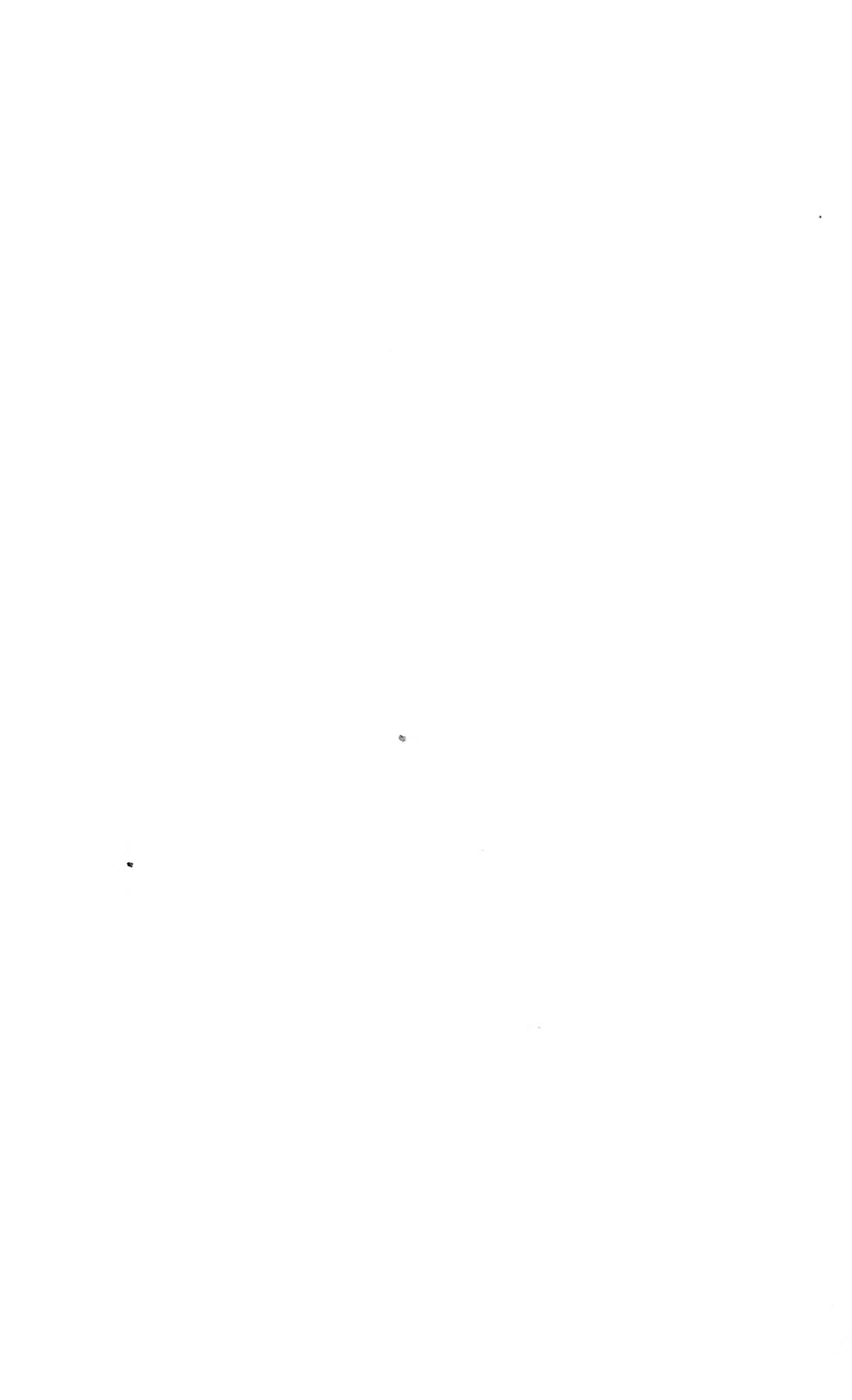


3 9999 06316 113 5

**BOSTON
PUBLIC
LIBRARY**









A. H. Allen

SEVENTEENTH ANNUAL REPORT

OF THE

BUREAU OF STATISTICS OF LABOR.

With compliments of

Carroll D. Wright,

Chief of Bureau of Statistics of Labor.

BOSTON :

WRIGHT & POTTER PRINTING CO., STATE PRINTERS,
18 POST OFFICE SQUARE.

1886.

SEVENTEENTH ANNUAL REPORT

OF THE

BUREAU OF STATISTICS OF LABOR.

MARCH, 1886.



BOSTON :
WRIGHT & POTTER PRINTING CO., STATE PRINTERS,
18 POST OFFICE SQUARE.
1886.

CONTENTS.

	Page
LETTER OF TRANSMITTAL AND INTRODUCTION,	xvii, xviii
INDEX TO SUBJECTS,	v-xvi
HENRY KEMBLE OLIVER,	1-48
PART I., CO-OPERATIVE DISTRIBUTION IN GREAT BRITAIN, . .	49-154
PART II., PROFIT SHARING,	155-236
PART III., FOOD CONSUMPTION. QUANTITIES, COSTS, AND NU- TRIENTS OF FOOD-MATERIALS,	237-328
PART IV., ART IN INDUSTRY,	329-394

INDEX TO SUBJECTS.

INTRODUCTION.	Page
Memorial of General Henry K. Oliver,	xvii
The earlier publication of Report,	xvii
Co-operative Distribution in Great Britain,	xvii, xviii
Profit Sharing,	xviii
Food Consumption,	xviii
Art in Industry,	xviii
 HENRY KEMBLE OLIVER.	
Introductory remarks,	3
Early years,	3-5
Teacher at Salem,	5-12
Adjutant-general,	12-14
Superintendent of the Atlantic Cotton Mills,	14-24
Mayor of Lawrence,	24
Treasurer of the Commonwealth,	25-27
Bureau of Statistics of Labor,	27-33
A judge at the Centennial,	33
Mayor of Salem,	33, 34
Closing years,	34, 35
His personal appearance, etc.,	35-44
His masterfulness,	44, 45
His cast of mind,	45
Last words,	45-48
 CO-OPERATIVE DISTRIBUTION IN GREAT BRITAIN.	
INTRODUCTION,	49-52
Legislative action respecting a pamphlet on co-operation,	51
Sources of information,	51, 52
 WHAT IS CO-OPERATION?	52-54
Co-operation as first advocated,	52, 53
Co-operation at present,	53
Co-operation as defined by Holyoake,	53, 54
Co-operative, as distinguished from joint stock associations,	54
Distributive co-operation defined,	54
 HISTORY OF THE MOVEMENT,	54-68
The early social reformers,	54
Robert Owen, and his influence,	54, 55
The first co-operative newspaper,	55
The London Co-operative Society,	55
The first co-operative Congress,	55

HISTORY OF THE MOVEMENT — <i>Continued.</i>	Page
Co-operative societies in 1830,	56
Character of early co-operative experiments,	56
Table showing existing societies established before 1844,	57
Failure of early stores, and the cause,	57, 58
The plan of M. Louis Blanc,	58, 59
Thomas Hughes' opinion of Blanc's work,	59
Organization of the Rochdale Pioneers,	59, 60
Statistics of the Rochdale Pioneers,	61, 62
Cardinal principles observed at Rochdale,	62
Progress of co-operation after 1844,	63
Frederic Maurice, and his work,	63, 64
Legislation promoting co-operation,	64, 65
Holyoake's history published, and its influence,	65
Co-operation in 1862,	65
The establishment of the English wholesale society,	65
The establishment of the Scottish wholesale society,	66
The establishment of the Central Co-operative Board,	66
The establishment of a newspaper organ,	66
Co-operation on the civil service plan,	66, 67
Summary of co-operative progress since 1824,	67
Early and later efforts contrasted,	68
THE FOUNDATION IN LAW,	68-71
Statutes now in force,	68
Provisions respecting organization,	68
Corporate powers of societies,	69
Rules, how amended,	69
Power of societies to contract,	69
Provisions as to trading,	69
Power to make loans,	69
Tax exemption,	69
Settlement of disputes,	69
Consolidation, and dissolution,	69, 70
Rights of minors in societies,	70
Members and their liability,	70
Shares, number permitted to be held,	70
Provisions respecting members dying intestate,	70
Official investigation, how secured,	70
Seals, offices, and returns,	70, 71
Penalties,	71
THE RETAIL STORE,	71-85
Introductory remarks,	71
FIRST STEPS,	71
CAPITAL,	71, 72
SHARES,	72
NATURE OF SHARE CAPITAL,	72-74
PAYMENT OF SUBSCRIBED CAPITAL,	74
REGISTRATION,	74
THE EXECUTIVE COMMITTEE,	74-76
Duties of the committee,	74, 75
Number of members,	75
Tenure of office,	75
President, how elected,	75
Secretary and Treasurer,	75

INDEX TO SUBJECTS.

vii

THE EXECUTIVE COMMITTEE — <i>Continued.</i>	Page
Fees of members,	75, 76
Bonds,	76
BUSINESS PREMISES,	76
THE STOREKEEPER,	76
STORE FITTINGS,	76, 77
STOCK IN TRADE,	77, 78
Importance of careful purchases,	77
Range of articles to be kept in stock,	77, 78
Amount of stock,	78
Prices,	78
THE CHECK SYSTEM,	78, 79
Checks to prove purchases,	78, 79
Fraud in the use of checks,	79
Checks upon the manager,	79
DUTIES OF MEMBERS,	79-81
STOCK-TAKING AND AUDITING,	81, 82
Fair stock-taking important,	81
Auditing, how conducted,	81, 82
ALLOTMENT OF PROFITS,	82, 83
Provisions of the model rules,	82
Depreciation of property,	82
Reserve fund,	83
Educational, social, and benevolent fund,	83
Congress fund,	83
Bonus to employés,	83
THE BALANCE SHEET,	84
SUMMARY OF ESSENTIAL POINTS,	84, 85
THE WHOLESALE STORES,	85-96
Benefits of the wholesale stores,	85, 86
Failure of early attempts,	86
Organization of the English society,	86, 87
Value of shares,	87
Goods, how sold,	87
Profits, how divided,	87
Establishment of central and branch departments,	87
The shipping business,	87
The banking department,	88
Administration of the society,	88, 89
Provisions governing business with retail societies,	89
The Scottish wholesale society,	89, 90
Statistical statement of relations existing between the retail societies and the English wholesale,	90
The amount of patronage furnished by the retails considered,	90-92
Surplus capital and its effects,	92, 93
Productive enterprises of the English wholesale,	93, 94
The Crumpsall works,	93
The Leicester and Heckmondwike Shoe Works,	93, 94
The Durham works,	94
Tabular statement of profits of production,	94

THE WHOLESALE STORES — <i>Continued.</i>	Page
Profits of the shipping enterprises,	95
Surplus capital further considered,	96
STATISTICAL ABSTRACT,	96-109
Sources of information,	96, 97
Co-operative societies in the United Kingdom — 1862-1883,	98, 99
Co-operative societies in Great Britain — 1862-1883,	98, 99
Co-operative societies in England and Wales — 1862-1883,	100, 101
Co-operative societies in Scotland — 1872-1883,	100, 101
Co-operative societies in Ireland — 1872-1883,	100, 101
Results shown by the tables,	102
Co-operation in England and Wales, 1872 and 1883 compared,	102
Co-operation in Scotland, 1872 and 1883 compared,	102
Co-operation in Ireland, 1872 and 1883 compared,	102
Results of the comparisons,	103
Total population connected with the movement,	103
Ratio of sales, expenses, and profits to members,	103
Statistics of societies with annual sales amounting to £200,000 or more — 1866-1883,	104, 105
Statistics of the English wholesale society from March, 1864, to June, 1885,	106, 107
Miscellaneous statistics of the English wholesale,	108, 109
Statistics of the Scottish wholesale — 1869-1883,	109
THE CO-OPERATIVE UNION,	109-114
Objects of the Union,	109, 110
Provisions respecting membership,	110
Organization of the Union,	110-112
Proceedings of the Congresses,	112
Subjects discussed at the Congresses,	112
Statistics of the Union — 1869-1885,	113
The work of the Central Board,	113, 114
The Southern Guild,	114
REVIEW OF CO-OPERATIVE DISTRIBUTION IN GREAT BRITAIN,	114-120
The advantages of organization,	114
Reasons for success,	114, 115
How far the movement is co-operative,	115
Criticism to which the movement is open,	115, 116
How producers and wage workers are affected,	116, 117
Benefits of distributive co-operation,	117-120
APPENDIX,	121-154
Introductory remarks,	121
CO-OPERATIVE PRODUCTION IN GREAT BRITAIN,	121-127
Views of leaders of the movement,	121, 122
Two schools of productive co-operation,	122
Individualists and federalists,	122, 123
Difficulties and advantages of each system,	123
Theories of Holyoake and others,	123-125
What has actually been done,	125-127
Table showing co-operative productive societies,	126
CO-OPERATION IN FRANCE,	127-132
Progress of the movement,	127
Statistics of co-operative societies of Paris,	128-131
Details of administration,	130-132

INDEX TO SUBJECTS.

ix

	Page
Co-OPERATION IN GERMANY,	132-136
Modes of development,	132
Classification of German societies,	132
The raw material supply associations,	132, 133
The industrial magazines,	133
The industrial productive societies,	133, 134
The agricultural societies,	134
German co-operative unions,	134, 135
Consumers' societies,	135
Classification of members in people's banks and consumers' societies,	135, 136
Co-OPERATION IN AUSTRIA,	136-138
Statute provisions,	136, 137
Statistics of Austrian societies,	137
Distributive societies,	137, 138
Productive societies,	138
Co-OPERATION IN DENMARK,	138, 139
Co-OPERATION IN SPAIN,	139
Co-OPERATION IN HUNGARY,	139, 140
Co-OPERATION IN ITALY,	140-144
Co-operative banks in Italy,	140
Distributive societies,	140-142
Co-operative bakeries,	142
Productive co-operation,	142-144
Co-operative associations of day laborers,	143, 144
Co-OPERATION IN SWEDEN,	144, 145
The Workmen's Ring Society,	144, 145
Co-operative banking,	145
Co-OPERATION IN SWITZERLAND,	146
Co-OPERATION IN THE NETHERLANDS,	146-148
Statistics of societies,	146, 147
Consumers' societies,	147
Co-operative bakeries,	147
The agricultural societies,	147
Wholesale agency of the Society for Self Help,	148
Co-OPERATION IN AUSTRALIA,	148
THE ARLINGTON CO-OPERATIVE ASSOCIATION, AT LAWRENCE, MASS., 149-154	
Distributive co-operation in the United States,	149
Plan of the Arlington Association,	149
Its officers, how chosen,	149
Mode of administration of the society,	149, 150
Provisions as to shares,	150
The sinking fund,	150
Profits, how divided,	150, 151
Statistics of the Association,	151-154

PROFIT SHARING.	Page
INTRODUCTION,	155-158
Profit sharing defined,	157, 158
 PROFIT SHARING IN EUROPE,	158-166
The metayer system,	158
Profit sharing in the slate quarries of North Wales,	158
Early profit sharing in Ireland, France, and Germany,	159
The system on the Paris and Orleans railway,	159-161
The Compagnie d'Assurances Générales of Paris,	161, 162
The plan of M. Bord,	162
System of M. Chaix,	162
The plan of Billon et Isaac,	162
The Maison Leclaire,	163, 164
The Familistère of M. Godin,	164, 165
Profit sharing in Italy,	165
Profit sharing in England,	165
General results of profit sharing in Europe,	165, 166
 PROFIT SHARING IN THE UNITED STATES,	166-229
Subdivisions under which the subject is considered,	166
 PROFIT SHARING WITHOUT WAGES, IN THE MASSACHUSETTS FISHERIES,	166-171
Various methods employed,	166, 167
The system at Gloucester,	167
Methods at Provincetown and Beverly,	167, 168
Comments of owners and fishermen,	168
Experience of a leading firm at Gloucester,	168-171
Statistics of profit sharing, in the Massachusetts fisheries,	169-171
 PROFIT SHARING IN ADDITION TO WAGES, IN SEVERAL STATES,	171-189
Introductory remarks,	171, 172
A. S. Cameron & Co.,	172-174
Brewster & Co.,	174-176
A mercantile experiment,	176, 177
The Peace Dale Manufacturing Company,	177-186
History of the Peace Dale Company,	177, 178
How profit sharing at Peace Dale originated,	178
The plan as announced,	178-180
Results of the experiment,	180-186
Tabular statement,	183
Lister Brothers,	186, 187
The Pillsbury Flour Mills,	187-189
 PROFIT SHARING THROUGH STOCK-OWNING, IN MASSACHUSETTS,	189-229
Introductory remarks,	189-192
Legislation respecting co-operative corporations in Massachusetts,	190, 191
 Co-operative manufacturing in Massachusetts: 1870 to 1875,	192-194
The Somerset Co-operative Foundry,	192
The Union Cigar Makers' Co-operative Association, at Westfield,	192
The North Adams Co-operative Shoe Company,	192, 193
The Hampden Co-operative Association, at Westfield,	193
The Howard Co-operative Company, at Lynn,	193
The Cigar Manufacturers' Co-operative Association, at Westfield,	193

PROFIT SHARING THROUGH STOCK-OWNING — <i>Continued.</i>	Page
The Essex Co-operative Boot and Shoe Company, at Lynn, . . .	193, 194
The Sagamore Co-operative Boot and Shoe Company, at Lynn, . . .	194
The East Templeton Co-operative Chair Company, . . .	194
The Stoneham Co-operative Shoe Company, . . .	194
The Truro Co-operative Boot and Shoe Manufacturing Com- pany, . . .	194
The Westfield Cigar Makers' Co-operative Association, . . .	194
The Springfield Cigar Makers' Co-operative Association, . . .	194
The Massachusetts Cigar Makers' Co-operative Association, at Westfield, . . .	194
The Eastern Co-operative Association, at Westfield, . . .	194
 Co-operative manufacturing in Massachusetts: 1875 to 1884, . . .	195-203
Progress of co-operative manufacturing enterprises in Massa- chusetts: 1875-1884, . . .	195-203
1875, . . .	196, 197
1876, . . .	196, 197
1877, . . .	196, 197
1878, . . .	198, 199
1879, . . .	198, 199
1880, . . .	198, 199
1881, . . .	200, 201
1882, . . .	200, 201
1883, . . .	200, 201
1884, . . .	202, 203
 Co-operative manufacturing in Massachusetts: 1885, . . .	202-229
The Somerset Co-operative Foundry, its history and adminis- tration, . . .	202-207
The Kingston Co-operative Foundry, . . .	207-210
The Leonard Co-operative Foundry, at Taunton, . . .	210, 211
The East Templeton Co-operative Chair Company, its history and administration, . . .	211-214
The Athol Co-operative Furniture Company, . . .	214-216
The Stoneham Co-operative Shoe Company, its history and ad- ministration, . . .	216-218
The Middlesex Co-operative Boot and Shoe Company, at Stone- ham, . . .	218-221
The American Co-operative Boot and Shoe Company, at Stone- ham, . . .	221-224
The Franklin Co-operative Boot and Shoe Company, at Stone- ham, . . .	224-226
The Wakefield Co-operative Shoe Company, . . .	226-228
Summary of capital, product, workers, wages, salaries, and dividends, . . .	228
General remarks, . . .	228, 229
 SUMMARY AND CONCLUSIONS, . . .	229-236
Three general types of profit sharing, . . .	229
Consideration of profit sharing without wages, . . .	230
Consideration of profit sharing in connection with wages, . . .	230, 231
Cardinal principles of industrial partnership, . . .	231-233
Consideration of profit sharing in connection with stock-owning, . . .	233, 234
General remarks, . . .	234-236

FOOD CONSUMPTION. QUANTITIES, COSTS, AND NUTRIENTS OF FOOD-MATERIALS.

Preliminary remarks, 237-240

GENERAL INTRODUCTION, 240-255

THE NUTRIENTS OF FOOD AND THEIR USES IN NUTRITION, . . . 241-247

Principal nutrients of food, 242

Functions of nutrients, 242

Protein, so called, "flesh-formers," or "flesh substance," . . . 243

Fats, 243

Carbohydrates, 243

Mineral matters, or ash, 243, 244

Composition of animal foods, edible portion, freed from refuse, . . 245

Composition of animal foods, including both edible portion and refuse, 246

Constituents of vegetable foods and beverages, 247

DIGESTIBILITY OF FOOD-MATERIALS AS AFFECTING THEIR NUTRITIVE VALUES, 248, 249

Percentages of undigested matters in food-materials, 249

COSTS OF PROTEIN, 249-253

Comparative cost of protein in food-materials, 252, 253

AMOUNTS OF NUTRIENTS OBTAINED FOR 25 CENTS IN DIFFERENT

FOOD-MATERIALS, 253, 254

STATISTICS OF BOARDING-HOUSE CONSUMPTION, 255

THE DIETARIES COLLECTED BY THE BUREAU, 255-305

The dietaries, how divided, 255, 256

DATA UPON WHICH THE PRESENT STUDY OF DIETARIES IS BASED, . 256, 257

COMPOSITION OF FOOD-MATERIALS, 257-262

Composition of different parts of beef, 259

Percentages of nutrients in food-materials assumed in analyses of dietaries, 259-262

STANDARDS FOR DAILY DIETARIES, 262-265

Rations estimated from dietaries, 262-264

Nutrients in daily dietaries, 263, 264

Direct experiments in which the income and outgo of the body are compared, 264, 265

Standards for daily dietaries, 265

ESTIMATES OF COMPARATIVE QUANTITIES OF NUTRIENTS REQUIRED

BY PERSONS OF DIFFERENT CLASSES, 266-268

Quantities of nutrients appropriate for daily dietaries, 266

Estimated relative quantities of potential energy in nutrients required by persons of different classes, 267, 268

DETAILS OF DIETARIES, 268-305

Equivalent measures and weights, 268

Series A. Miscellaneous, Massachusetts, 269-281

Series B. French Canadian, Massachusetts, 282-292

Series C. French Canadian, Canada, 292-305

INDEX TO SUBJECTS.

xiii

STATEMENTS OF RESULTS,	305-310
Persons stated to be nourished by food of dietaries, and estimated numbers of "laboring men at moderate work" who would require the same quantities of nutrients,	305
Recapitulation of analyses of dietaries. Persons, employments, wages, etc., and quantities and costs of food,	306, 307
Recapitulation of analyses of dietaries. Quantities of nutrients estimated per man per day,	308, 309
Summary of analyses of dietaries. Quantities and costs of foods and quantities of nutrients. Maximum, minimum, and average per man per day,	310
DISCUSSION OF ANALYSES,	310-320
Averages of analyses of dietaries. Quantities and costs of foods and quantities of nutrients as estimated per man per day,	311, 312
DIETARY OF STUDENTS IN MIDDLETOWN, CONN.,	313, 314
DIETARY OF BRICKMAKERS IN MIDDLETOWN, CONN.,	314, 315
COMPARISON WITH EUROPEAN DIETARIES,	315-317
Comparison of dietaries examined with European dietaries and standards,	315, 316
IMPROVEMENTS IN DIETARIES,	317-320
Suggestions for the alteration of dietary A 9,	318, 319
Suggestions for the alteration of dietary A 11,	319
FOOD OF THE POOR IN BOSTON,	320-322
CONCLUDING SUMMARY,	322-328
Costs of total food, per man per day,	323
Costs of animal food, per man per day,	323
Quantities of food, per man per day,	323
Quantities of animal food, per man per day,	323
Proportions of animal protein in total protein,	324
The total quantities of nutrients,	324
Noticeable features of the dietaries,	324, 325
Questions suggested by the data,	325-328
ART IN INDUSTRY.	
Introduction,	329-332
ART AS A PROFESSION,	332-360
The inquiries comprehended by the schedule sent to artists,	332-334
Nativity of the artists who replied,	334
Time employed in art work,	334, 335
Medium employed in art work,	335
Branches of art work pursued,	335
Number receiving art education at home, abroad, and at home and abroad,	336
Sources of instruction at home,	336
Sources of instruction abroad,	337
Sources of instruction at home and abroad,	337

ART AS A PROFESSION — <i>Continued.</i>	Page
Time devoted to art education,	337, 338
Cost of art education,	338-340
Generalizations as to art education based upon the schedules, . . .	340
Comparisons of income, expenses, and miscellaneous personal statistics, for 37 artists,	340-345
Statistics of income,	341
Statistics of expenses,	341, 342
Miscellaneous personal statistics,	342, 343
Average income and expenses,	343, 344
Analysis of the statistics,	344, 345
The appreciation of art as an art, and the development of a higher artistic standard,	345-360
Opinions of artists upon the question: "Do you consider that your congenial art specialty is appreciated in this country as an art — also as an industry?"	346-353
Opinions of artists upon the question: "What would you recommend to awaken a deeper interest in the fine arts in America, and to secure a higher artistic standard and a better financial return?"	353-360
APPLIED ART,	360-384
Evidences of progress in the application of art in various industries, .	360-364
The industries represented by the schedules received from manufacturers,	364
Summary of replies, including leading replies, from manufacturers to the following schedule questions,	364-381
Are you the inventor or do you originate any part of your products?	364, 365
How long were you engaged in your work before reaching successful results?	365-367
What is the market for your productions?	367, 368
Do your productions compete with and decrease foreign imports?	368-370
How far reaching are your productions as regards the poor? . . .	370, 371
In what way have your products changed the artistic sentiment of the people?	371-374
To what societies or associations, of an art nature, do you belong?	374
Can important works of art be produced by your method? . . .	374, 375
Can your style of work be produced cheaper and better abroad?	375-377
Can your productions successfully compete with foreign productions of the same grade?	377, 378
What medals, awards, or diplomas have you received?	378
Do you employ American or foreign talent?	378
Have you any trades journals?	378
Do you use foreign or American material in your products? . . .	378
Remarks in general,	379-381
The photo-reproductive processes,	381-383
Chromo-lithography,	383, 384
EDUCATIONAL FACILITIES,	384-391
The provisions of the public statutes,	384
The Massachusetts Normal Art School,	384, 385
The Massachusetts Institute of Technology,	385
The Worcester Free Institute of Industrial Science,	385
The Lowell School of Practical Design,	385, 386
Instruction in drawing in the cities and towns of the Commonwealth, .	386-391
In the city of Lawrence,	386, 387
In the city of Lowell,	387

INDEX TO SUBJECTS.

xv

EDUCATIONAL FACILITIES — <i>Continued.</i>	Page
In the city of Fall River,	387
In the city of New Bedford,	387, 388
In the city of Taunton,	388
In the city of Brockton,	388
In the city of Worcester,	388, 389
In the city of Springfield,	389, 390
In the city of Lynn,	390
In the city of Haverhill,	390
In other cities and towns,	390
In the city of Boston,	390, 391
The work of the Boston Society of Decorative Art,	391
CONCLUSIONS DRAWN FROM THE SCHEDULES,	391-394

Commonwealth of Massachusetts.

BUREAU OF STATISTICS OF LABOR,
COMMONWEALTH BUILDING.

BOSTON, March 1, 1886.

HON. A. E. PILLSBURY, *President of the Senate.*

Sir:—I have the honor to transmit, herewith, the Seventeenth Annual Report of this Bureau.

General Henry K. Oliver, the first chief of this Bureau, died August 12, 1885, and this being the first report issued since his death, I have considered it proper to incorporate in it a brief memorial of his life and services. This was eminently proper, it seemed to me, because the Massachusetts Bureau of Statistics of Labor was the pioneer bureau of its kind in the world, and General Oliver for four years worked faithfully in and out of season to make its work valuable. This memorial was prepared at my invitation by Rev. Jesse H. Jones, a gentleman who knew General Oliver, and loved him, thoroughly appreciating his work and his character. We honor ourselves when honoring such a man as General Oliver.

In order to present this Report at an earlier period than I have been able to transmit the reports for the last few years, no extensive investigation was undertaken. The last annual report was not completed until August, and much of the appropriation of last year was consumed in its preparation. The present report has been prepared, also, to a large extent, under the appropriation of last year. The work of the Census has prevented the Bureau from undertaking any very comprehensive investigations, yet the matter involved in this publication compares well with any in the past.

Part I., relating to Co-operative Distribution in Great Britain, consists of the pamphlet ordered by the Legislature last year,

and of which 15,000 copies were published for general distribution. As that pamphlet was stereotyped I thought it best to use the matter in this volume, and so preserve it in permanent form. In the collection and preparation of the material for Part I., I am very greatly indebted to the valuable services of Mr. Horace G. Wadlin.

Part II., on Profit Sharing, contains valuable material, in the collection and preparation of which the Bureau has had the benefit of the services and researches of Mr. Franklin H. Giddings, of Springfield, and cordial acknowledgments are due him.

Part III., relating to Food Consumption, is based upon original statistics gathered by the agents of the Bureau. Prof. W. O. Atwater, of Middletown, Conn., has had charge of the chemical and scientific analyses of the material, and his services are gratefully acknowledged.

Part IV., Art in Industry, is a tentative chapter, as explained, and contains preliminary work looking to more extensive investigations as to the value of art in the industries of the Commonwealth. Mr. Frank T. Robinson has rendered good service to the Bureau in the collection of data for Part IV. The illustrations contained in this Part have been furnished without expense to the Commonwealth.

I take pleasure in thanking Mr. Charles F. Pidgin, chief clerk, and Mr. William C. Hunt, second clerk, for the care and interest they always take in the work of the Bureau.

I am, Sir,

Your obedient servant,

CARROLL D. WRIGHT,
Chief.

HENRY KEMBLE OLIVER.

HENRY KEMBLE OLIVER.

BY REV. JESSE H. JONES.

On Wednesday evening, August 12, 1885, General HENRY K. OLIVER, the first chief of this Bureau, died. His large and manifold powers, the high attainments which he made, and the various important positions in the Commonwealth which he filled; but especially his eminent services as the founder of the work of this Bureau, becoming thereby the pioneer of all such work in the world, render it fitting that a memorial of him should be made by the Bureau in this Report.

EARLY YEARS.

HENRY KEMBLE OLIVER (originally Thomas Henry, but changed apparently to preserve the name of his mother) was born in North Beverly, Essex County, in this State, on Monday, November 24, 1800. He was the third and youngest son, and eighth child of the nine children, of Rev. Daniel and Elizabeth (Kemble) Oliver. He was in the sixth generation from Thomas Oliver, surgeon, who with his wife Ann and eight children came over from Bristol, England, in the ship *Lion*, along with the family of Governor Winthrop, landing at Boston, June 5, 1632; and who was one of the founders of the First Church of that town and a Ruling Elder in it. His

mother, daughter of Thomas Kemble, Esq., of Boston, was descended from Thomas and Margaret Kemble, who came over to that city in 1640. Both families had remained there from the first. His ancestors in the direct line on his father's side, after Surgeon Oliver, were three merchants (the third a graduate of Harvard, and all three of marked eminence), one lawyer, and one minister, his father. The Olivers were connected by marriage with various leading families of the State, — with the Hutchinsons, Wendells, Brattles, Belchers, and Bradstreets. His father's mother was sister to the grandfather of Oliver Wendell Holmes, and the same blood which ran in his veins, and in the veins of the illustrious physician-poet, ran also in those of Wendell Phillips, *clarum nomen*, whose personal effort, as much at least as that of any, brought this Bureau into existence. Down to a few years ago the family had supplied forty out of the forty-five of the Oliver alumni names at Harvard and Dartmouth. Plainly, then, from the choicest of that choice seed-wheat which God sifted the whole nation of England to get, wherewith to plant a new nation in New England, this man sprang.

The father, Rev. Daniel Oliver, was a minister of rigid orthodoxy, after the strict, Puritan type. He graduated from Dartmouth in 1785, was pastor of the North Church, Boston, from 1787 to 1800, preached in Beverly one year, and in Exeter, N. H., a short time; after which, in 1802, he brought his family back to Boston to remain, while he himself went forth as a missionary to the Indians, going for years on long and wearying horseback rides from place to place in what were then the western wilds, preaching the Gospel to the dusky savages of the forest.

The family being now settled in Boston, Henry Kemble in due time attended the Mayhew school there; and prepared for college partly in the Latin school, partly at Phillips Academy, Andover, and partly with an elder brother in a private school;

and he was by this brother entered at Harvard in 1814, at the age of thirteen years and eight months. Surely the boy gave promise of what the man would be.

After two years his father removed him to Dartmouth, chiefly at least because he looked with strong disfavor upon what he considered the growing theological laxity of Harvard. In 1818 he was graduated by *both* colleges, certainly a singular and very unusual mark of high esteem. Concerning himself at this time, he has left these remarks :

“On leaving college, . . . I had a not very large amount of scholarly knowledge, and that chiefly in Latin and Greek, but I had excellent health, thoroughly pure moral habits and moral principles. I had a natural aversion to intoxicating drinks and tobacco, and all forms of dissipation, and a moral dread of bad or dangerous company and excesses. While in college an evening passed in the practice of music or in visiting families where music, especially sacred music, was practised, was the greatest pleasure I desired.”

For a number of months he found only occasional and trifling employments, but in the early summer of the following year he had gained the fit place in which to begin his career. In May he applied for the position of usher in the newly established Latin grammar school at Salem, and received the appointment.

TEACHER AT SALEM.

On Saturday, June 12, 1819, he, “a beardless youth” of eighteen years and seven months, took the stage for that city, and arriving there “was welcomed as a member of the household of the late Rev. Dr. Browne Emerson, pastor of the South Church.” By a son of his host, then a lad, and to be one of his pupils, he is spoken of at this time as “a fine, good-looking, even handsome young man, fresh from Dartmouth College, and full of all sorts of college pranks and college learning.”

The schoolroom, in which he was to teach, "had seats for eighty boys, and was crowded with a hundred and twenty boys, — an unmanageable mass, but that a third teacher, Master Parker, . . . took the younger classes into the committee room for recitation." Of the spirit in which he began his work he himself thus writes :

"I entered upon my work as teacher on the following Monday, June 14th, 1819, with very great 'fear and trembling,' and entire distrust in my own abilities, knowledge and ultimate success. This self-distrust has always characterized me and has impeded my labors ; but I determined to work hard in school and out, and if that would secure success, no effort on my part should be wanting."

From the first he felt poorly furnished for his work. His early studies "were not congenial, consisting mostly, after he was nine, of mere translations from Latin and Greek into English, with very insufficient instruction in any English studies." As expressing his own judgment in his riper years he says :

"My intellectual powers had not been properly and philosophically cultivated. . . . On the whole, the nine years spent in preparing for college and in college I have always considered a failure ; and but for the hard, close, unyielding perseverance of the nine years that followed graduation, I should, as a scholar, have been a greater failure. But finding, when I commenced teaching, my imperfections, I set about a course of self-education, first in the studies in which I was guiding others, then in French, then in Spanish and Italian, adding afterwards a wide course of mathematics and philosophy, general literature and history, with astronomy."

It is of special interest as showing the power of his mind to grow, and grasp, and enlarge its aptitudes, to know that whereas in youth he had no relish for mathematics, he came

at length, as the result of his determined studying, to have in them a positive delight.

This course he pursued alone, this "battle he fought out unaided," except as he "consulted that well-known and accurate Greek scholar, the late Hon. John Pickering."

"Feeling," he continues, "the great deficiencies of my previous education, and the constant push of the demands made upon me by the pupils, I was merciless to myself, studying as many hours out of school as I taught within. What I thus acquired I have never forgotten." And he still further says, "My unvarying rule in the classics was to keep myself as thoroughly prepared on every author in the hands of every class in school, as existing facilities would allow, keeping myself a fortnight in advance of their several lessons; and never entering the schoolroom but with the certainty that no question could be brought to me that I could not at once answer."

It was this hard studentship and the mastery thus acquired, which caused it to be said of him in after years,—

"He was a diligent student, and a fine classical scholar. The classics were his delight, and to the day of his death he had not forgotten the beautiful passages from the Greek and Roman writers which he had early learned; and the sharp, clear sentences which he always wrote showed how the Athenian style had taken fast hold upon his mind. His command of words was something wonderful, and his vocabulary seemed inexhaustible."

He rose constantly in the estimation of men. His salary at first was \$600 a year, a quite munificent sum for those days, rarely, if ever, paralleled for so young a man; and now considered to be more in proportion than the \$1,500 which is now paid for much older men in the same relative position. Yet once and again his salary was increased, October 1, 1822, to \$750, and in June, 1824, to \$900. He was selected as the

orator of the day in Salem for the Fourth of July, 1824, and acquitted himself so creditably that his oration was long remembered and spoken of highly. Besides the eloquence of his style, it is especially mentioned that he “dwelt with much enthusiasm on the cause of the Greeks,” who were then striving for independence; and with burning words “denounced the melancholy exception to the purity of our institutions, *the scourge and curse of negro slavery*,” and also “the persecution of the Indians in Georgia;” and that he paid an earnest tribute to Lafayette, closing with a glowing apostrophe which has been preserved. In 1827, when at length the English High School was established, on the 16th of June he was appointed principal with a third increase of salary, now to \$1,000.

On Monday, July 9, 1830, Master OLIVER resigned his position, and directly after set about building a two-story schoolhouse near his own home on Federal street, for a private academy. In the construction and appointments of this building no pains were spared to introduce every excellency then known. Without, it had an ample playground and gymnastic apparatus. Within, it had a coat-room, wash-room, recitation rooms, and various apparatus. The following account of the school is from a Salem print:

“The course of study laid down was extensive and complete, boys being prepared either for college, or for business life; the latter course including the French and Spanish languages, and a very wide range in mathematics, history, and general literature. For the first time in any Salem school, if not for the first time in any school in this country, music was taught, and a regular course of gymnastic training with suitable apparatus was provided. A very complete set of philosophical, astronomical, and chemical apparatus, costing upwards of \$2,000 was procured, which enabled him to supplement his oral and book instruction by actual illustrations. . . . His school was always full, and, with the aid of able assistant teachers, he was enabled to achieve a satisfactory success.”

After five years he yielded to the urgency of friends and changed his school over into one for girls, and "his rooms were immediately filled." This school he continued to teach for eight years, when a very complimentary event withdrew him altogether from his profession, and changed his whole career. Here then we may pause and briefly survey in retrospect his course of life. It was the year 1844. For twenty-five years he had been a teacher in Salem, and his course had been a steadily growing and unbroken success. It was a very remarkable career. Some clue to the secret of it we may gain from the following statements, chiefly made by former pupils, expressing the estimation in which he was held, and showing the work he had done and his manner of doing it.

Mr. D. H. Emerson, son of Rev. Browne Emerson in whose house he first lived at Salem, wrote to him in a letter of reminiscences in 1878 thus :

"You made the Latin school what it became while you were there, and I ascribe all the glory it acquired to you. You drilled us in the grammar and text-books. You compelled us to know all about them. You ground them into us. You were severe in that, and you succeeded with your pupils. Yet you were never severe in your treatment of those who were placed under your rule. This is my testimony. With greatest respect and affection."

The same gentleman writing of him said :

"When I was but a youth he came to my father's house and all the time he continued there we felt that he was in that home as an elder brother, and as a son. . . . With all his decision of character he was never cruel or unjust. In that empire in which he wielded a sceptre, the Salem Latin School, he ever ruled by love. Himself a splendid scholar, he had patience with our dulness, and seemed to enjoy the pains he took to lead us forward in the paths of learning."

An old pupil writes :

“ We found him strict without petulancy, exemplary in habits, firm and humane in correction, never losing temper. He punished if he found it needed, on his own responsibility, without referring to the senior master ; but often with his expressed approbation, saying, ‘ Mr. OLIVER, punish that boy well,’ the only effect of which was, however, to emphasize the deliberateness of the punishment without increasing the amount. I never saw any sign of resentment on the part of the boys.”

Another writes :

“ *Master* OLIVER was the idol of the boys of ’19, ’20, ’21 ; and, therefore, it is as ‘ Master ’ OLIVER that *we* have ever loved to think and speak of him.”

Yet another writes :

“ No man held his scholars more by his potency of nature, his fine mind, his sympathy with youth, his many-sidedness. It is fifty years since, and yet his character shines in our memory with undiminished brightness.”

Of his private school he himself said :

“ No fact laid down in the sciences as existing in those days, and within the grasp of the general school, failed to be illustrated experimentally.”

Concerning discipline in his girls school, he also said :

“ During eight years of my instructing girls no instance occurred of what may be called punishment. To strike a girl was abhorrent to my nature ; nor did anything occur which needed that, or any other method of severity in discipline. Yet I had an average of fifty pupils.”

Rev. Joseph B. Felt in his history of Salem, also, pronounces this school, "the most complete and successful ever carried on in that city."

As an illustration of the truthfulness of the testimony borne concerning him, that "his teaching developed great interest and great proficiency in the scholars of all the schools in which he taught," we give the following fact. "The senior class in the English High School between 1827 and 1830 computed all the solar eclipses of the 19th century between 1831 and 1900, visible in the United States." Can this be equalled, or anything like it given for that time?

These sayings are great praise, such praise as only the excellent of the earth win; but they are the natural utterance of those who had felt the quickening power of his master soul. We glean from them a few phrases in which certain chief traits of his character appear: "Never severe;" "never losing temper;" "he ever ruled by love;" "*Master* OLIVER was the idol of the boys;" "I never saw a sign of resentment on the part of the boys;" "no man held his scholars more by his potency of nature."

Yes, "*potency of nature*," that is the crowning phrase, which includes all the truth contained in the other sayings. Let us try and unfold a little the reality that is in it, and so gain a larger and fuller knowledge of this nature which was so powerful.

This youth, this man, this teacher, this "Master" of youth was a wide, deep, strenuous river of human vitality flowing upon and through those in his charge. He maintained complete government, kept clockwork order and precision, and worked his scholars to the hight of their bent; and yet there was no domineering spirit in the man, nothing of tyranny in his temper, or of harshness in his methods. He ruled, but not by will. He controlled, but not by fear. Rather it was his own strong, abounding life which quickened the very fountains

of the life of his pupils, making them wish to do what he would have them do, and awakening in them the desire to strive and the effort to achieve, beyond what could have arisen in them of themselves. By this power he belonged to that class of teachers, few and rare, who are of the first order, of whom Mrs. Emma Willard of Troy, N. Y., and President Mark Hopkins of Williamstown, Mass., are illustrious examples.

During the period which now came to a close the following events personal to himself had occurred. In 1821 he moved his father's family to Salem, and assumed their support. During 1824 he was studying for the ministry, with a view to entering the Episcopal Church, and a sermon which he composed is extant; but becoming Unitarian in his views he gave the matter up. In 1825 he married Sarah, daughter of Capt. Samuel Cook, a retired sea-captain, by whom he had, in all, seven children, two sons and five daughters. In 1836 he was elected a member of the first Common Council of Salem, and was twice re-elected.

When "Master" OLIVER closed his school, and changed the whole course of his life, he had arrived at the full maturity of his powers; and they were marked by largeness of nature, strength, intellectuality, and gentleness. All the best that was in him had been displayed. Henceforth there was to be rather the varied application of his powers in larger spheres of action than the growth and expansion of those powers. We turn now to consider the new direction of his activity.

ADJUTANT-GENERAL.

The very complimentary event by which his professional work as a school teacher was brought to an end, and he was set instead in a large field of public affairs, was his appointment, March 22, 1844, by Governor George N. Briggs, upon

the recommendation of Hon. Leverett Saltonstall, as adjutant-general of the State. This altogether strange event, by which the master of a girls school was put in charge of the military affairs of a great State came about as follows :

In 1821 the young teacher enlisted in the Salem Light Infantry. He had an erect, soldierly figure, and strong, military aptitudes ; and this company was to him like a military school in which he acquired a good degree of military knowledge and training. So marked were his capacities and acquirements, that at different times he was pressed to accept a commission, but steadily declined. When, however, in 1833, he, still a private, was elected lieutenant-colonel of the newly organized Sixth Regiment (the same which made itself so famous in Baltimore in 1861), he accepted, and three years after was made its colonel. As showing how efficient an officer he was, the following incident is related.

“ On the occasion of Governor Edward Everett’s visit to Salem, September 22, 1837, the Governor said that he never saw regimental manœuvres performed with equal rapidity outside of the regular army,” as they were then performed by Colonel OLIVER’s regiment.

In 1839 he resigned his coloneley ; but his fine and noble gifts had been brought clearly to view. His splendid personal appearance, his athletic form, his military bearing, his power to command, his abundant knowledge and thorough training, all went to make him a well-nigh ideal officer. We may feel certain that he was not surpassed, perhaps he was not equalled, by any military officer in the Commonwealth at that time. So when we know the man, it does not then seem so strange that the head of a girls school was made the head of the military affairs of the State.

With the moderate salary of \$1,500, and no allowances, he set himself “ earnestly at work, and soon had matters in hand.” “ He made personal visits to the various regiments ;

. . . attended all the parades of the several brigades and regiments, arranged for drills and instruction of commissioned and non-commissioned officers, with a sufficient number of privates to make battalions of 150 to 200 men, and took personal charge of them. . . . Thus interest was excited in the infantry, and the service was soon improved."

In May, 1846, the Mexican war being in progress, the national government called for troops, and by direction of Governor Briggs General OLIVER took charge of raising and officering the regiment which Massachusetts sent out to that service under the command of Colonel Caleb Cushing. This regiment entered the city of Mexico with the army of General Scott.

In the year 1838 Colonel OLIVER had been elected first lieutenant of the Ancient and Honorable Artillery Company of Boston; and now, eight years later (1846), as General OLIVER he was elected captain, the highest social, military position in the State.

In the following year (1847) he was appointed by President Polk a member of the Board of Visitors of the Military Academy at West Point, and was made its secretary. But in the midst of gathering honors and efficient labors he was called to new duties in a wholly diverse sphere of action.

SUPERINTENDENT OF THE ATLANTIC COTTON MILLS.

If the appointment of a teacher of a girls school to be adjutant-general of a great State, if the preferring one then in civil life before all the older militia officers of that State and setting him over them, and if the complete success of this officer both in his personal relations to the men and in his whole administration of the affairs committed to his charge, do all together seem like a leaf torn out of a

romance, rather than a chapter of sober prose in this plain, prosaic century; hardly less strange is the next movement in the life of this extraordinary man, by which he, who had never run a spindle or loom, or handled a pound of cotton in any practical way, and who knew nothing more of a cotton mill than might be learned by walking casually through one, was called to be superintendent of a cotton mill not yet in existence. Having been appointed to this position by the directors and treasurer of the "Atlantic Cotton Mills," a newly organized manufacturing corporation at Lawrence, he resigned his position as adjutant-general, January 15, 1848, and repaired at once to that city. There he found one mill erected, but only the walls and flooring, no part of its "fitting up," that is, of its shafting, elevators, closets, etc., being in position, nor any of its machinery set up.

He at once went to Lowell, and devoted three months with Mr. Homer Bartlett, agent of the Massachusetts mill there, to acquiring a knowledge of the general management then in vogue of large cotton mills, to selecting overseers, second hands, etc.; and to watching the several stages in the process of manufacturing the goods from the bale to the cloth.

On the fifth of July the machinery began to be delivered at his own mill, and with his newly selected overseers, and without any outside assistance, he did all the work of fitting, setting up, and starting the machinery; getting it all running and beginning to turn out cloth in October. Their very first goods were of the finest grade, and were made from cotton known as "good middling," bought at seven cents a pound; and the General remarked with honorable pride, "a more beautiful article had not been placed upon the market. They have always kept a lead in the trade."

In nine months this man had learned a complicated and difficult manufacturing business, of which he before knew nothing, had selected with Mr. Bartlett's assistance his staff of subordi-

nate officials, every one of whom were unknown to him when he began, had taken an empty shell of a building, and he and they together had set up all the machinery in it, and in less than four months from the time they began to set it up had it in complete successful operation, turning out the best of goods. Such a work was the manifestation of extraordinary, perhaps of wholly unique powers.

In July of this year (1848), his family moved to Lawrence. The next year a second mill was built under his charge; and equipped and run with the same success as attended the other; and in 1850 yet a third mill was built. Otherwise his life as superintendent was in the nature of the case monotonous, and few incidents can be recalled. A general survey of the field with the statement of the chief reasons for his success, so far as we have been able to gather them, will set the man and his work in Lawrence sufficiently before us.

The first of his powers were rare keenness, quickness, penetration and scope of mind, by which he seized at once and held in masterful grasp whatever he set his mind upon. And these qualities were equally shown in the realm of things and the realm of persons. He saw into the system of a cotton mill, comprehended it as a whole, and mastered it in detail in five months. He could brigade a mill or a State with equal readiness and success. And he had such power to grow that he introduced improvements or supervised others in doing so with a readiness equal to that of experts trained in the matter from their youth. But his power to read persons was quite equal to his power to penetrate things. He knew a man when he saw him. His great gray eye was like the eye of fate. His was indeed an eagle glance. So marvellous was this power that only they who experienced it could really have the full sense of what he was in this regard.

The next of his powers was his personal magnetism, his power over men whereby he so touched and quickened them in

the very fountains of their life, that they instinctively desired to do what he would have done; and thus he secured from them, whether he was present or absent, their best service.

A third power, closely allied to this, was his pure sincerity, a source of perennial good will which flowed a clear, living stream from the depths of his own life in sweet purposes and wise actions for the welfare of all in his charge. By the working together of the last two powers in him he drew to himself the excellent men, the fine, well-skilled, and growing young men; and when they came it was to stay, and so well pleased were they that they drew others after them also. Thus it was that he gathered round him a class of overseers much superior to what is often found in mills.

And what were all these powers, as in happy radiance they were shed forth in Lawrence in constant glory of well-doing, but that same "potency of nature" which bound with silken cord his scholars to him when he was a school teacher, even from his early youth? In a slight incident which he relates, this kingly gentleness wherein his influence over others so largely lay is well displayed, and we present it here.

"A girl had appropriated to her own use a piece of cloth from her loom, pinning it about her waist under her clothing, and it had become loosened and dropped upon the ground, as she with the rest of the help was leaving the mill-yard at evening. It was picked up by an overseer, and brought with the girl to me, standing at the time [as he often did] on the mill-steps seeing the crowd go out. The poor girl trembling and mortified, stood amidst shouts of laughter, doubtless anticipating some severity at my hands. Knowing that not she alone of all the weavers had done this kind of wrong, I waited awhile till silence ensued, and then holding up the piece of cloth, said, 'Let her among you who never did the like say how this girl shall be punished.' Nobody spoke, but they all quietly walked away; and then, tossing the cloth to the offender, I said, 'Go, and sin no more.' I have always thanked Him who first dealt with an

offender thus, that I remembered his example. I suppose the poor girl, like the most of her comrades, was sorely pinched by poverty, and could not withstand the temptation. 'Forgive us our debts, as we forgive our debtors;' yet if we are not forgiven a good deal more than we forgive, we shall have a hard time of it."

Another illustration of his natural impulse toward his fellow-men was shown in connection with a fatal accident which happened at the mills one winter.

Sometimes in winter the ice would form or drift against the rack (which was set at the upper end of the flume to keep off flood-wood and the like from the wheel) to such an amount and solidity that it was necessary for men to get on the mass, break it up, and get the fragments away, so that the water would have free course to run through. On one occasion, in the winter of 1855, when three men were thus working, the pressure was so great that the rack gave way and was carried down instantly on to the great waterwheel, and one of the three men was swept away with it, while one of the others sprang out, and one fell in just at the side. When the rack gave way the General, hearing the crash, sprang to the spot and, leaping down upon the timber that had given way in the middle but yet held in place at the end, seized the man who had fallen in as he rose, but lost his hold being pulled away by a watchman who thought he was also falling in, and the man again sank. Assuring the watchman that he was safe, and stooping still farther down, as the man rose to the surface a second time, he grasped him with a firmer hold, and dragged him out.

The largeness and manifoldness of General OLIVER had their widest field and fullest display in Lawrence. And the fruits of his varied activities were many and lasting. One instance was his work in improving Lawrence Common, a lot of eighteen acres, which in 1849 was an uninteresting field with few

trees upon it. The Essex Company gave this lot to the city upon conditions that \$300 a year be expended upon it, and that the superintendents of three manufacturing companies, which were named, together with the mayor of the city constitute a committee to take charge of it and expend the money. The Atlantic mills was one of the companies named; and Superintendent OLIVER was made chairman of the committee, and the whole work was placed in his charge. By 1853 five hundred trees had been planted "in avenues, and cared for until rooted and established," and the rude, unsightly field in due time became "a very fine public square." "His interest in the park never flagged, and whenever he met a Lawrence man his inquiry was for his trees on the common."

Another of his public spirited good works was the establishment of a Free Library in his mill. To accomplish this, he "called together the overseers in 1851, and told them that if they would organize themselves into a library association, with suitable officers, he would commence the library with a donation of a hundred volumes, and a loan of \$50 for new purchases. This was done; and by consent of the treasurer, Mr. William Gray, a room was fitted up in the counting-room building, and the library commenced. Mr. Gray added valuable donations." Sometime since the number of volumes had increased to 3,500. He also established free hot and cold baths in a building in the rear of the mill.

Naturally, from his former avocation, feeling a deep interest in the educational affairs of the new town, and having been elected a member of the school committee, he proposed that as soon as a high school should be established, he would convey to the city for use in such school all the school apparatus that he had collected for his own school at Salem. This was done; and in recognition of the gift the building in which the high school was first established (and which is the largest school building in Lawrence) was called the Oliver School

House. He also presented to the high school for its principal room a set of busts and statuettes, and of engravings for its walls; and many books of reference, Latin, Greek, and mathematical, for the use of teachers and pupils.

In 1853 he was sent as a delegate to the Constitutional Convention, and was made chairman of the committee on military affairs.

In the same year occurred the notable case of his "famous effort to deposit his vote" at a turbulent town meeting, in which his courage, vigor, strength, and intense love of freedom and the exercise of one's legal rights, were so effectively manifested. The town meeting was holden to vote on the acceptance of the city charter, and the moderator had made a decision by which the Democrats deemed themselves aggrieved, and they determined to block the way to the ballot-box, and prevent voting. So

" . . . in an instant the avenues to the platform were blocked by a mass of angry, excited men, and the prospect of a row was unusually promising. The ballot-boxes could not be reached, and everything but arms and tongues were at a stand-still. At this instant General HENRY K. OLIVER entered the hall, and stood for a moment near the door to enquire into the occasion of the singular spectacle. On being informed of the situation of affairs his eyes flashed, and exclaiming, 'I should like to see the man who dares resist my casting a vote in a legal meeting,' he strode down the open space, thrusting aside one or two opposers, and quickly elbowed his way through the outer circle of the crowd, until he came to the solid mass blocking his way; when, placing his hands upon the shoulders of the two nearest men, he sprang up upon the mass, and was rapidly making his way, vote in hand, over heads and shoulders to the ballot-box, when he was seized by the skirts of his coat; but leaving one of them roughly torn away in the hands of his opposers, he reached the box, and placed therein his ballot. This success, no less than the ludicrousness of the movement, was too much for the

solidity of the Democratic column. Good nature was restored, and the voting went on."

Wherein his great power lay is well disclosed in the following remark made by a Lawrence paper in its obituary of him :

"In Lawrence the stalwart figure of the General, physically one of the finest specimens of manhood ever resident among us, will be long remembered. His trained voice, and ability as a public speaker and leader, whenever political, musical, or public matters were discussed, made him a prominent figure in every assembly."

After a prosperous run of the mills in 1855, the treasurer, as an expression of his satisfaction at the result, placed in General OLIVER's hands the means to defray the expense of a course of six lectures. Of these Hon. Josiah Quincy gave one, and General OLIVER four on astronomy, illustrated with large diagrams and a magic lantern. To these were added six concerts given by a chorus of a hundred singers selected from among the operatives of the mill, and trained by competent instructors under General OLIVER's supervision. Both lectures and concerts were given in a hall over the counting-room of the Pacific mills, and were all free to the mill people. So successful were the concerts that one of them was repeated by special request in the city hall to an operative audience, admitted free, of more than 1,500 persons.

In 1857 the ladies of Lawrence presented General OLIVER with a gold watch "as a slight token of their sincere regard and esteem, and as a pledge of their confidence in him, as a gentleman of generous and noble impulses and of the highest moral principles and sentiments."

Nine years had well-nigh passed away since the work of setting up the machinery had begun ; and on May 25 of this year

(1857) he received a letter from the treasurer couched in flattering terms, announcing the successful run of the past year, the profit made, and asking him to add \$500 a year to his salary, making it \$3,500. In October following he "was amazed and thunderstruck at receiving" quite another kind of letter, which resulted in his being discharged from the service of the company; and to his dying day, although he at various times endeavored so to do, he could never get a single word as a clue to show the reason for the treatment inflicted on him.

Before the severing of his connection with the company, General OLIVER secured an examination of the mill property and accounts by experts, who reported the mill in complete order, and the accounts correct.

Concerning the cause of the event above stated enough is now known to show that his great and generous heart, by which he sympathized so keenly with the operatives that he shrank from cutting down wages as one would shrink from fire, was in large measure the cause. Thus came the first great shadow over his life.

From his peculiar and intimate relations with the overseers, it was quite appropriate that he should address them, as he did, a farewell letter. To this they sent him a letter in response, the chief portions of which are here given.

"In reviewing the ten years of your connection with us, they really seem like a pleasant dream, so unruffled their general aspect, and rapid their flight. True there has been an occasional cloud, . . . but all have been satisfactorily resolved. . . . On the whole, the remark in your letter that 'unity of opinion and coöperative good will have marked our whole course,' is truly just, and one to which we heartily respond.

"You will doubtless pardon us for taking the liberty of pointing out somewhat in detail the leading characteristics which have distinguished your administration from some others with which we have been familiar during our history in manufacturing. While their sole

policy has been to secure the greatest possible amount of service for the least possible amount of money, your administration has been characterized, not only by a fair and just regard for the company's interests, by requiring close attention and application on the part of all employed ; but, farther than this, you have uniformly manifested a zealous regard for every instrumentality which could be made to contribute to their mental, moral, and religious welfare.

“Among the various enterprises to this end allow us to mention that at an early day in our history your generous donation of one hundred volumes, which formed the nucleus of our now extensive library, claims a prominent place, and commands our highest commendation and gratitude. . . .

“It also affords us great pleasure to advert to the fact that, while our mental wants have been thus supplied, our love for the beautiful in nature has not been overlooked : for our yard, instead of being left to present a desolate, prison-like appearance, has (in accordance with your taste and skill) been made to blossom as the rose, presenting through the flowering seasons, in rich abundance, those representations of all that is beautiful in nature. Who among us has not been admonished by the language of those beautiful flowers, inciting to lives of purity, innocence and virtue.

“Another idea originating with you was the erection of bathing rooms for general use among the operatives, which have largely contributed both to their general health, and to their pleasure.

“And still another, never-to-be-forgotten ; — we refer to those moral and instructive entertainments in the form of lectures and concerts, in which you were pleased to mingle with us as one of us, without regard to distinction or caste. This is truly an anomaly in manufacturing, and found only (to our knowledge) in your administration.

“We also feel greatly indebted to you for the interest manifested in regard to the proper keeping of the Sabbath, and attendance upon public worship ; as also for your agency in securing free seats in the various churches, that none, however poor, need be excluded for want of sittings. In connection with this topic we would name another fact (peculiar to yourself), that, while you have been frank

and free in expressing your own religious and political views, you have accorded to others the same rights and privileges unmolested.

“But lastly, . . . it is well known throughout this community that all the public spirited enterprises of this city, — and especially the establishment of the Oliver grammar and high school, have, from the first, received your hearty coöperation and beneficent donations. In our opinion it is but just to say, our public schools owe their present flourishing condition and standing, mainly to your untiring interest and efforts in their behalf. . . .

“In conclusion, permit us to express our sincere desires that long life, with health, happiness and prosperity may attend you here, and a blessed immortality await you hereafter.

(Signed)

J. M. RICHARDS,
ELISHA WINCH,
NEWMAN S. FOSTER,

Committee.

Plainly General OLIVER was before his time. In him we see a luminous ideal and prophecy of what a superintendent is to be in the coming age, when the spirit of the Crucified shall rule in a cotton mill, as fully as in the life of a saint.

The people of Lawrence appreciated the man who had done so much for their municipality, even if the corporation whose working force he had created failed to do so, and in November they elected him mayor, so that he filled that office during the year 1859. In the election of this year he was sent as representative to the General Court for 1860. During this period he served occasionally also as agent of the State Board of Education, visiting the public schools in various parts of the State, and attending institutes and conventions.

TREASURER OF THE COMMONWEALTH.

The high esteem in which General OLIVER was held throughout the State was shown in a very marked way in the autumn of 1860 by his nomination for the office of Treasurer of the Commonwealth on the same ticket with John A. Andrew. He was four times re-elected, and thus became the war treasurer, as Andrew became the war governor. And it may not be too much to say that he did his full share in his place, as Governor Andrew did in his, to maintain Massachusetts in that leadership of all the loyal States, which she took from the start.

We can hardly imagine what his work really was, but some facts may help us in a measure. When he took the office there were but two clerks in it. When he left it there were thirty-two, including all departments, an increase made necessary by the variety and vastness of the financial operations which the war caused. During his five years of office he handled \$77,780,843.51, — a sum greater by \$18,125,204.34 than all the receipts of the State for the sixty years of the century before. In the last year alone (1865), his financial operations amounted to \$24,876,163.77, and he had in charge sinking and other funds to the amount of \$8,701,509.64. Moreover, wholly beyond the regular duties of his office, he was made virtual paymaster of all the troops which Massachusetts raised, for the various periods before they were mustered into the United States service; and went about from post to post as the occasion required, carrying the funds with him and paying the troops. Besides all the rest he was made the caretaker of bounty money to the amount of \$635,297.90, which it was no part of his duty to receive or have any charge of, but which he took at the request of Governor Andrew because there seemed to be no other person to take it. When the interest had accumulated on this sum to the amount of \$9,800, and the

attorney-general had given his written opinion that this money belonged to the party who had taken care of the principal, General OLIVER, having too fine a sense of honor to take it without a definite, legal title, referred the matter to the legislature. This body voted a petty \$500 to the treasurer for his services, and turned the balance into the recruitment fund.

The mere enumeration of his services at the close of his five years' term (the constitutional limit) "filled *six pages* of an octavo legislative document (House Doc't No. 226, 1865)." He had received and paid out, that is, twice handled, a sum amounting in round numbers to 155 millions of dollars once handled, had been under bonds of \$100,000 renewed every year; and for all this immense care and labor he had received an average annual salary of \$2,300. And when, at the close of his term of service the legislature learned from him the facts, it promptly raised the salary to \$5,000 for his successor; *but it did nothing for him.*

The story of his action in saving the credit of the State in June, 1864, has been often told, and does not need to be repeated here. But there is one element in the story, never to our knowledge brought out, which deserves to be especially mentioned. This man, who had too fine a sense of honor to take the interest money without an explicit legal title, had equally too fine a sense of responsibility to take the risk of promising more interest on the State loan than the law provided, without making adequate provision to meet the same, if the legislature did not approve his act. And so he and his wife, of their own accord, dedicated their little patrimony to this end, if the need should be, well knowing that they ran the risk of being stripped of their last dollar. And after this joint act of sacrifice by the two in their heart, the husband went cheerily on to the street, and arranged for the amount needed. Such was the man, who served his native State with abundant

capacity and perfect rectitude in her dire period of stress and storm.

Massachusetts, with honest pride in righteous doing, gained for herself the high honor of paying in gold during and after the war every debt incurred in gold before the war, and so keeping her faith with her creditors unbroken; and her war treasurer did his full share towards this achievement. By reason of his character and capacity in part it could be said at the close of the war, "yet the fiscal affairs of the Commonwealth, notwithstanding the strain to which they have been subjected, are in the highest degree satisfactory; and the financial credit of Massachusetts stands unsurpassed at home and abroad." No one, we think, can survey the whole field of this service, and become familiar with the facts, without coming to the conclusion that the character which the war treasurer displayed was a distinct honor to the Commonwealth, and that for the labors he performed, the burdens he bore, and the services he rendered there is still due him a distinct debt.

In January, 1866, the man who had rendered these gigantic services to his native State went out of his office by constitutional limitation, without a place and without an income. Upon his election as treasurer he had moved back to Salem, and was now dwelling in the ancestral mansion which his wife had inherited from her father, and around which the most sacred associations of his early manhood were gathered. After but a few days, namely, on the 26th of this month, his wife died, but he continued to keep house, his daughters acting as housekeepers.

BUREAU OF STATISTICS OF LABOR.

In September, 1867, Governor Bullock gave General OLIVER an appointment "to look into the condition of the factory children in the various establishments of the State;" and he con-

tinued in this work nearly two years, "finding the several laws relating to their employment when under ten years of age, when between ten and fifteen years of age, and to their schooling, violated every where." He "prepared two reports on the subject which excited not a little attention and comment."

On the 23d of June, 1869, Governor Claflin approved the bill for the establishment of this Bureau, and July 31 following appointed General OLIVER its chief. Of his fitness for the place, both as to spirit and capacity, the foregoing narrative gives abundant evidence. Of his work here done we need not speak at length. The four volumes of his reports are his monument; and as an evidence of the estimation in which they are held we may mention the fact that the Bureau frequently receives requests for them from various parts of the world. In judging of them it should be borne in mind that the field was wholly new, that of precedents there were absolutely none, that he was the pioneer of all such work in the world; and a fair judgment will decide that he worked with courage, fidelity, thoroughness, and much clear-sight. To have staked out the ground would have been a large work, but he did more. Some of the worst fallows in the field he vigorously set about breaking up.

Experiments had to be tried, and he tried them. Some of his work struck at the roots of great evils, or erroneous opinions in society, and so awakened deep hostilities. This was inevitable. His reports weighed strongly in behalf of the wage workers. They could not be truthful without doing so; and the larger and more complete they were in setting forth the actual facts, the more they must weigh on that side. At length with strong and heavy hand, but with accurate touch, he laid bare the tenement-house system of Boston; and also made it plain that the savings banks of the Commonwealth were largely the storehouses in which the well-to-do people preserved their plenty out of the reach of taxation. Inevitably a storm was

raised against him, and when his second term expired he was not reappointed.

Concerning his work there is no need that we speak further. But it is well-fitting that he himself should give his own view of it; and to this end we present considerable extracts from his private memoranda, as follows :

“To the duties of this office I gave my undivided attention, having to grope my way, unguided by precedent, example, or experience, — everything connected with our investigations being new, and nearly all of those investigations being rendered difficult and embarrassing by the very strong and powerful influence of the employing class of the State, who with no sympathy in the subject-matter of our inquiries, withheld, as a general rule, all such information as our inquiries were directed to obtain. The laboring class as a whole, however, gave such support as their small means and unemployed time would permit. The inquiries were in their behalf, elicited their support, and gained their confidence. . . .

. . . . I prepared, with the assistance of Mr. McNeill, four annual reports, upon the earnings, cost of living, and savings or indebtedness of the laboring classes of the State: their homes, education, habits of living, morals, manners, hours of labor, amusements, societies of various sorts; upon factory life, factory operatives, factory children, — the schooling of the latter, half-time schools, etc., etc.: in fact upon everything relating to the great question of labor and the laboring classes, skilled and unskilled, and to every grade and variety of them.”

Speaking of the savings banks, he says :

“These banks were originally intended to be the managing depositaries of the poorer and working classes; but we found by a very full investigation that while the banks were the resort of the poorer class in great excess [of numbers], (13 or 14 of them to 1 of the better-to-do class), they were likewise the resort to a large extent of the latter class: and that (taking 1870 as an illustrative year) one-

fourteenth of the whole number of deposits contributed three-sevenths of the whole amount deposited; that of 47 millions deposited about 21 millions were deposited in sums of \$300 and upwards, averaging \$573 for each deposit, the remaining 26 millions being deposited in sums under \$300, and averaging about \$55 for each deposit. Now as the average earning for skilled labor that year was only about \$700, out of which an average family was supported, it was plain that none of the first class of depositors were skilled laborers, but were of the wealthier folk above them; and this showed that nearly half at least of the money in those banks was that of the better-to-do people."

"Our revelations occasioned a great stir, and great excitement."

"It soon became public opinion and yet remains so that these banks are largely used by the better-to-do classes, and even by capitalists; and that it cannot be argued with truth that the increase of their deposits is an indication of the prosperity of the working classes."

Concerning factory children, he says:

"We proved that very little regard was paid to the laws of the State in relation to the employment of children in factories, and to those requiring that these children should receive a certain amount of schooling each year; and that children under ten years of age, notwithstanding legal prohibitions, were employed all over the State, and that in not a few instances factory children received from year to year no instruction whatever; so that of the children of the State between 5 and 15 years of age, at least 10 per cent could not be accounted for as attending any school, public or private. Our deductions were founded on the reports of the Secretary of the State Board of Education."

"I left the Bureau in May, 1873, retiring with an entire consciousness that I had omitted no effort in endeavoring to do my whole duty; and that, regardless of personal considerations, I had faithfully set forth the real status of the working people, — the real producers of the State."

One of his peculiar qualifications for the place he filled in this Bureau was that he was a man of sympathetic heart, who ever saw the human in the poorest and lowliest of men. The following extract from an address illustrates this element of his character.

On the 23d of June, 1874, the working people of Lawrence celebrated the passage of the ten hour law. Gen. OLIVER was present, and was reported by the *Journal* of that city to have “closed an able speech with these noble words :

“Before I close I wish to speak on a subject that is very dear to my heart. I speak it tenderly — it is that of the children. I have a little grandchild at home whom I love dearly, and whom I have spoiled — what grandfathers usually do. Among the many faces around me I see a number from over the water. Some of you will remember that, before the ten hour bill was passed, children were gathered up by employers from all over the country — from poor-houses and the streets of the cities — and put to work in the factories. Those children never returned to where they were taken from. They never were heard of after. The first Sir Robert Peel said, ‘Take care of the children’ Now the children are taken care of. And I want to see before I die the short-time schools of England established in this country, and no child under the age of fifteen years to be allowed to work over five hours a day. And I want you, the gainers by this measure, to see that the law relating to the employment of children is strictly enforced. And now as I close and bid you good night, I will say what I said at a previous banquet in this city. A celebrated Queen of England once said that if her heart was opened after her death, on it would be found the word, ‘Calais.’ Lord Ashley, now Earl of Shaftesbury, said that upon his heart would be found the words, ‘Lancashire operatives.’ If my heart could be seen under similar conditions, upon it would be found the words, ‘Factory children.’”

As an example of the marked intellectual qualifications of General OLIVER to be chief of this Bureau, and of the high

appreciation which he awakened in those who were especially fitted to judge, we quote the following by Mr. George Holyoake, from his book entitled "Among the Americans."

"Gen. H. K. OLIVER was a name I had known in England in connection with questions of international industry. The social wisdom of his conversation, now I had the pleasure to be his guest, impressed me very distinctly. He explained to me that when in charge of this Bureau, he counselled workmen to provide themselves with a *competence* for their declining years; — defining 'competence' as that sum which, if invested in days of health and work (from earnings), would yield an income at a given age, equal to their average annual income, and sufficient to maintain them in the station in which they had moved. This is what I mean by wise talk, conversation that moves steadily to new issues, and in which material terms are rendered definite 'Competence' is a term on many tongues, but Gen. OLIVER was the first person whom I heard define it as he used it."

These words, coming from one of England's foremost thinkers and writers on industrial questions, are certainly high praise. In them is reflected a single ray from this great and luminous soul.

He ceased his labors in this Bureau in May, 1873, not being reappointed. All his great, unexampled, highly honorable services to the State seemed to him to have been forgotten; and this man of keen spirit and high sense of honor was cut to the quick with the apparent injustice done him. He shared with all prophets and pioneers of human progress in all the ages past the sacrificial pain without which, it would seem, the advancement of mankind cannot be achieved.

And now, as we close the record of this passage in his life, we venture the judgment that when he was made chief of this Bureau no other citizen of the Commonwealth was so well prepared, whether by natural endowments or by experience

and training, for the work that there was to do ; and that both what he did and what he endured entitle him to the lasting gratitude of all toilers, whom he so earnestly and with singleness of mind served.

A JUDGE AT THE CENTENNIAL.

For about three years he “was almost entirely unemployed.” In 1875 a school building in Salem was named after him, at the dedication of which he made the address. Also his birthday was celebrated by his friends in Salem that year in a manner “long to be remembered.” Early in April, 1876, he was appointed one of the judges at the International Centennial Exhibition, held in Philadelphia, Pa., and went there on the tenth of that month. He was assigned to Group XXV, which was devoted to “Instruments of Precision.” This “included astronomical instruments of all sorts, trigonometrical and surveying instruments ; magnetic, electric, telegraphic, and telephonic instruments ; and microscopes. There were also added musical instruments of every variety from organs down ;” and these last being formed into a sub-group, he was made chairman, and as such prepared the printed reports. Having finished his duties and returned home, he was recalled in October to be one of the “Judges on Appeals.”

MAYOR OF SALEM.

While yet in Philadelphia he received in November a letter from Salem desiring him to accept a nomination for the mayoralty of that city. He consented, and was elected and re-elected, serving in all four years. His administration was characterized by economy, reduction of expenses, great reduc-

tion of the debt of the city, and a thorough visitation of the schools and discussion of their interests. When the municipal year of 1881 was approaching, the General, having rounded his full eighty years of life, declined a renomination.

CLOSING YEARS.

In December, 1880, he presided at the annual dinner of the alumni of the Boston Latin School; in May, 1881, at the annual dinner of the Unitarian Association given in Music Hall; October 21, at a banquet held at the Revere House in honor of the completion by Franz Liszt of his seventieth year; and in November, at the annual dinner of the Association of the Alumni of the Boston grammar schools prior to 1831.

In April, 1881, the family removed for a year to Boston by the desire of his children, that he might have a better opportunity for hearing concerts, lectures, etc. In July of that year the American Institute of Instruction, of which as "Master OLIVER" he was one of the founders in 1830, met at St. Albans, Vt. With a possible exception he was the sole survivor of the original members. By request of the directors he prepared and delivered there a eulogy on George B. Emerson, who had died in the March before. During the winter following he lectured twice before the Young Men's Christian Union, and delivered other addresses in Boston, Lawrence, and Haverhill.

In April, 1882, he went to pass the summer at North Andover with a daughter, then recently married. The season being one of unusual heat, a weakness of the heart was developed, which ordinary remedies did not control; and in the ensuing winter a fatal result was anticipated. More decided treatment, however, restored a considerable measure of health as the spring drew on. In May following he returned to the old house in

•

Salem, sacred to him by so many hallowed associations and tender recollections, and continued to reside there till his death. "He gave up attendance upon any public meetings, and went to the polls but once ; but spent most of his time in reading, and writing music, and articles for the press."

At the annual meeting of the trustees of Dartmouth College, held in June, 1883, he was made Doctor of Music. A request having been made by President Bartlett of that institution the following year for a portrait, one was painted in the late autumn, and sent there in season for the Commencement of 1885. Also, at the request of the present chief of this Bureau, a portrait in oil was provided and placed in the rooms of the Bureau. The letter of the chief acknowledging the portrait gave to the General the highest satisfaction.

At length, in midsummer of last year, the time of the end came. On Sabbath evening, July 26, the final stroke fell, being a semi-paralysis of a portion of the brain not affecting the motor system. He lingered, gradually failing, until Wednesday evening, August 12, when, as the gloaming was darkening over the earth, he peacefully fell asleep. On Monday following he was buried from the North Church, where he had worshipped so long, with the full honors of a reverent people. He has passed from the sight of men ; but his name shall live and his memory be cherished, we believe, while God shall be worshipped in song, and courage, purity, public beneficence, and high manliness shall be loved and honored among men.

HIS PERSONAL APPEARANCE.

In person General OLIVER was a trifle less than six feet high, of square shoulders and massive frame. His head was $23\frac{3}{4}$ inches in circumference, and his brow was Websterian,—a beetling crag, underneath which his large, full-set, and lumin-

ous gray eyes looked out with keen and kindly glance. His nose was Roman, his jaw square and strong; and the flesh hung on his face in folds like a vail, tremulous to every emotion of the sensitive soul that dwelt behind it. There was something of the mastiff in him, but the heart that beat in that grim and powerful frame was all alive with gentle humanness, and love of every virtue, and quick delight in every high, chivalric deed.

Various expressions of judgment concerning him, which appeared in the press at the time of his decease, are quite worth preserving, as showing the general estimate in which he was held in the communities where he had resided.

"In the death of General OLIVER, Salem loses her foremost citizen. Judge Endicott and Dr. Loring are probably more widely known, but the general's long and varied career entitles him to the rank we have given him."

"Gifted with a commanding presence, and with large and varied mental aptitudes, with an ear attuned to music and a voice of unlimited strength and compass ["a stentorian voice" it was called in Lawrence], he was a born leader. His powers as teacher, writer, student and executive officer were such as are rarely combined in the same person. But the strongest note in his character—the dominant chord—was the musical one, as will be surely testified by those who recall him (as the present writer does) in charge of this part of the service in the North Church, Salem, which he raised to choice excellence, as he did also that of the Unitarian Church in Lawrence."

"Large-hearted, full of generous instincts and purposes, the poor of Lawrence had, during the early years of that city, no warmer and more constant friend than General OLIVER.

"In educational matters he was equally efficient. When superintendent of public schools, or as a private citizen, he could and did step in and fill the place of the high school principal, when that was temporarily vacant."

“He was an industrious and unsparing student, his tastes leading him to the languages, and the physical and mathematical sciences. He was familiar with the Greek, Latin (which he wrote and spoke with great ease), French, Spanish and Italian languages; and, when a teacher, took great delight in pupils whose tastes led them in the same direction. He aimed especially at thoroughness and exactness in the study of the classics, and the scholars whom he fitted for college will bear testimony to his persevering and practical fidelity.”

“In whatever he was engaged General OLIVER exhibited large intellectual resources and unusual fertility of mind. He was extremely fruitful in thought, and had retained vast stores of knowledge on various subjects, acquired in his student days. There are very few who commenced their mental labors so early, who worked so assiduously, and who continued them to so great an age.”

“As a teacher he was remarkable for the skill with which he combined perfect familiarity with his pupils on the play-ground, or any where out of doors, and thorough control of them in the school-room.”

His “intellectual resources” and “fertility of mind” had their fullest manifestation during that period of his life when he was a teacher, especially in the later portions of it when, “besides the daily labors of his school, he delivered lectures and addresses very frequently, and was active in most of the literary enterprises of the time.” He was quite adequate to all this, because he was “a ready speaker, a clear and forcible writer, familiar with many branches of science and literature.”

“He held office many years, and held many offices, yet he died poor as the world counts wealth. He never profited by any position which he held. Nor did he surrender his opinions for any purpose. What he thought he spoke, what he believed he did.”

It may be added that what he thought was truth, and what he spoke was wisdom; that what he believed was good, and what he did was righteousness, to a degree rarely attained by

men. Through his crystalline soul the light from the pure, interior realm of life was transmitted with almost unrefracted ray.

His spirit and temper is shown, and the living presence in him of that same overmastering love of freedom and sympathy for all the oppressed of every nationality, which lived and burned in our revolutionary fathers, so near to whom he was born, by the fact that "in the eighty-first year of his age he addressed a land league indignation meeting in Salem, in clear and eloquent phrase expressing his earnest sympathy with their cause, and urging that the weapons of Ireland's warfare be reason, right, and the truth unyieldingly insisted upon."

There is one trait of General OLIVER's character which we would fain present, but which quite eludes our pen. It is his wit, his humor, his *bonhomie*. Says one, "His love of fun was irresistible, and he possessed a bright, keen humor." Another writes, "His wit and humor were keen, exuberant, and irrepressible, his industry untiring, his intellectual resources exhaustless." His humor was like the shimmer of sunlight over the landscape in a sultry summer day. His whole person quivered with it on occasion. When he laughed he laughed all over, frame and flesh all shaking with the merriment. But it cannot be set down and told with types. Sooner could one photograph the colors of a sunset than put forth in print the gleam and glow and billowy flow of humor and fun in his talk. And there was no frivolity in it. It was altogether the play-impulse of a large, active, and many-sided soul, disporting itself just a little in a natural, spontaneous way. Nor was there a trace in it of that dark, malicious bitterness which finds its perverse delight in thrusting to the quick a fellow human for some peculiar, inborn trait. He made fun for others, but never of others.

But wit, the intellectual side of humor, this can be told ; and one very bright instance we here relate. When the concerts were given by the chorus of operatives in Lawrence, there were no printed programs ; but General OLIVER announced the pieces from the stage. At one of the concerts, perhaps the last one, in the city hall, the General announced as the last piece of the evening, "The Three Bell(e)s of Lawrence ;" and, as everybody was looking with eager enriosity to see who might the three fair damsels be who should come on to the stage under such a title, the bells of the three factories began to ring for nine o'clock, the vast audience took the joke, and in the best of good humor the people dispersed to their homes.

Perhaps in nothing did his intellectual powers of learning, thought, and wit combined so much appear as in his macaronic poetry. He dropped into macaronic writing in a letter, or on a postal, just as easily as he uttered a humorous remark in conversation, and the gleam of fun was always lurking in it. One poem of this character, containing the names of many persons, is especially spoken of.

In his family life there was a beauty, strength, and tenderness well-nigh as rare as the man himself. He was genial, gentle, faithful, watchful ; and nothing lacked in all his life of what a man could do for home. A writer says : "In his private and family life General OLIVER was most kind, gentle and lovable. To his friends he was endeared by most pleasing traits of character. His vivacity of manner, his wit and humor, his merry tales, and his treasures of knowledge made him extremely companionable." And another says : "His fund of information and his great versatility made him a delightful conversationalist on any topic." Such was the man in home and social life.

He was a communicant of the Unitarian Church, passing to it with so many from the Evangelical Church in the twenties. At one time before this event he had contemplated being a

minister, as we have previously said, and made some preparations to that end. In his private school he gave "unsectarian religious teaching" on the Sabbath to such of his pupils as desired. But it was in his spirit and way of life as superintendent of a cotton mill that he most fully exemplified Christianity, and gave the especial evidence that he was a genuine follower of the Nazarene.

In all persons and all things *quality*, which is density, purity, fineness, and in living things *verve* combined, must have quite equal consideration with volume and variety, in order to a full and complete estimate, and a just judgment. This is eminently true of the subject of our memoir. And the quality of this man in the whole substance and spontaneity of his life had its perfect disclosure in his musical gifts. This teacher, military commander, manufacturer, treasurer of a State, and first chief of a labor bureau in the world, was a musician of a high order.

Whoever has studied with intent gaze the grain and bloom of a brilliant flower, and carefully noted the delicate tints which in gentle gradations from pink to white were disclosed in the petals, and has reflected on the nature of living things, cannot have failed to perceive that the vitality of the plant came to the acme of the intensity of its manifestation in that flower. Music was the exquisite bloom of this manifold soul.

Ere he was three years old he was learning to sing on his mother's knee, and he caught the singing from her, who was "a fine singer," it is said; and so we know that his aptitude came in his blood. At ten years of age he was a singer in the Park Street Church choir, having "a pure and powerful soprano voice, which continued into his seventeenth year, when it fell to a deep bass" of like quality. Forbidden by his father (who shared the prejudices of religious people in those days against all except sacred music) to learn to play any instrument, the powers within him compelled him to disobey; and he mended up an old, cracked, one-keyed flute, and began to

learn on it, hiding it whenever a visit of his father was expected. He was ever in some choir, in that of the Park Street Church, as has been said, in the Pierian Sodality and the chapel choir at Harvard, in the church choir at Dartmouth, and in a Salem choir at first, until he became an organist. He began to learn the piano and organ in 1821. As he grew in years he grew in musical development, and became "an expert performer on the organ, violoncello, flute, and piano forte." He was an organist for some thirty-six years or more, namely, for about two years, beginning in 1823, at St. Peter's Church, Salem; for two years after at Barton Square Church; for twenty years at the North Church; and for twelve years at the Unitarian Church in Lawrence. About 1824, also, he organized in Salem the Mozart Association for the study of the works of the great authors, he being its president, organist, and conductor.

But he also rose to the yet higher grade of composer. Having early made himself familiar with the laws of musical harmony he began, at thirty-one, the composition of tunes with "Federal Street," and wrote chants, motets, anthems, a Te Deum, and many hymn tunes. "In 1849 he edited, with Dr. S. P. Tuckerman, a collection of church music, called 'The National Lyre;' and in 1875 published a work, entitled 'Oliver's Collection of Sacred Music.'" He was, moreover, "one of the oldest members of the Boston Handel and Haydn Society, and of the Salem Oratorio Society, and an honorary member of the Portland Haydn Society."

"The proudest moment of his long musical career came to him on the 25th of June, 1872, when at the Great World's Peace Jubilee in Boston, in the presence of President Grant, Secretaries Fish, Robeson, and Boutwell of the Cabinet, and many dignitaries, he stepped from the ranks of the undistinguished chorus, and, taking his place among the three or

four great composers and conductors of the world, he led, baton in hand, a choir of 20,000 persons in his own hymn and choral, — in ‘Federal Street,’ with his own words, ‘Hail Gentle Peace,’” written for the occasion.

In April, 1876, he was appointed one of the judges at the Centennial in Philadelphia, Pa., and assigned to the work on musical instruments there, as we have heretofore described.

But a mere catalogue of work and achievement cannot fulfil our purpose. The soul of the man in its whiteness and nobility exhaled in his music, and that music must be sung in order that the whiteness and nobility may be seen. As a specimen we have selected, and here present, what we believe to be his finest composition, the tune “Merton.”

MERTON.

REV. PHILIP DODDRIDGE.

H. K. OLIVER.

Ye golden lamps of heav'n, fare-well, With all your fee - ble light;

Farewell, thou ev - er - changing moon, Pale em - press of the night.

This tune, like his more familiar but less intellectual and individual “Federal Street,” was not properly speaking composed. It came into his mind as a sweet echo from a far away land, and the way of its coming was this. One Sabbath in 1843, in

the North Church, Salem, of which General OLIVER was musical director and organist from 1828 to 1849, and Rev. John Brazer was at the time pastor, Dr. Doddridge's beautiful hymn, beginning "Ye golden lamps of heav'n, farewell," was to be sung as the last piece in the afternoon. All through the day the director could recall no tune that seemed adapted to the words. The afternoon sermon had got well under way, but the director was not listening to it. Instead he "was conning the words of the hymn, more intent upon them than upon the words of the preacher," when suddenly a melody came floating into his mind. It being his custom always to have blank music paper at hand, he at once pencilled down the melody, and set the other three parts to it, thus completing the score for his own use. Then he made a copy of each several part on a single staff, and handed the slip to the one of his quartet choir who sang that part—all of whom could read music at sight, and "were singers of rare excellence both in voice and skill." So when the reading of the hymn was ended, the organ sounded, the choir arose and sang with earnest heart and well befitting tones; and thus was this tune, which the angels had brought, given forth that day unto men.

Merton is a unique tune. It is too high and fine and different to be imitated. In originality, in delicacy, in purity, spirituality, and aspiration, it has few equals and no superiors in the realm of American sacred song. It seems like a lofty Ionic column of pure, Pentelic marble, standing in the soft moonlight of a summer night, when the moon at her full rides high up towards the zenith.

But it is not for the tune itself, but to reveal the soul through which it came, that the above has been written. Only through a soul large and white, like one of the heavenly gates of pearl, could the angels have breathed such a tune. Who knows the tune, and loves it in his heart, may know in so far the grain

and grade of this stainless, knightly soul, that soared with the eagle, sang with the lark, and walked in the ways of the living God with a perfect heart.

HIS MASTERFULNESS.

If we were asked to decide wherein, most of all, the greatness of this man of manifold powers lay, we should answer that it was in his ability to *master* whatever he set himself upon.

He was master of himself, and his life was a career of singular purity, integrity, good-will, and well-doing. He was master of his pupils, and that by such excellent powers, so beneficently exerted, that to the last they loved to think and speak of him as "Master OLIVER;" and they evidently felt towards him something as President Garfield felt towards his president, Mark Hopkins of Williams College. He became master of many studies, some of which at first were distasteful to him, but in which he acquired by sheer force of mind and will a positive delight. He was master of military affairs in such eminent degree that he made the militia regiment which he commanded well-nigh equal in drill to troops of the regular army; and afterwards he raised the standard of efficiency of the militia of the whole State, when put in charge over it. He grasped at once, and became master in a few months, of the whole business of manufacturing cotton cloth, gathering and controlling many hundreds of operatives, and conducting the manufacturing operations of a great corporation with as much smoothness and precision as he did his girls school of fifty pupils,—a gigantic work wrought by a giant man. He became master of finance, and bore the unexampled burdens of his office as war treasurer of this Commonwealth so easily, that few realized how great the burdens were, or understood

what service he was rendering ; and as a master he wrought his pioneer work in this office. Above all other titles well may he ever be known as “ Master OLIVER.”

HIS CAST OF MIND.

Whoever surveys the life of General OLIVER cannot but feel that he did not gain that high place in the world’s knowledge and esteem, which his powers deserved ; and the reason may justly be asked. It lay in the structure of his mind, and the nature of his personality as springing therefrom.

His mind was fundamentally discursive rather than concentrative. His life ran out rich and strong on various lines of thought and action, but never did and could not bring all its force to bear on any one work. His powers worked apart, and with plenitude of results ; but these were like rays dispersed from a convex reflector. The several beams were seen, each in its separate line ; but in seeing them one did not feel the full measure of the soul from which they sprang. His selfhood did not centre in his will sufficiently to secure the working of all his gifts together in such a way as to constitute him, in the highest degree which those gifts should have enabled him to be, a personal force in society. He himself recognized this at length, as when, near the close of his life, surveying the beginning of his career, he spoke of the “ entire self-distrust ” which he felt at that time, and said “ that this distrust had always impeded his labors.”

LAST WORDS.

We sum up the whole man in a single saying. General OLIVER had the eye of an eagle, the frame of a lion, and the heart of a woman ; and the large and noble powers of such a

being were blended together into a fine harmonious unity in him. He was a kingly man in person, in endowments, and in action; and the manifoldness of his career was according to the greatness and diversity of his powers. He was a teacher of youth, and he came to be of the first order, attaining to the same rank, though not to the same fame, with Arnold of Rugby. While a school teacher he became a military officer of such excellence as to receive promotions extraordinary if not unexampled in this Commonwealth, during the period in which his service occurred. From being adjutant-general of the State he was called, without previous acquaintance with the business, to take charge of an empty building, select the staff, gather the help, put in, set up and start the machinery, and manage the manufacturing operations of a great cotton-mill corporation; and such was his power to grasp and master new affairs, his keenness in reading men, his judgment in selecting them, and the "potency of his nature" in moving them to act in willing agreement with himself, that from the first yard of cloth the product of the mills was in the highest grade, and for the whole period that he had charge they were a complete success. He was the war treasurer of this Commonwealth, as Andrew was the war governor; and without a flaw of action, but in the hour of exigency with ready daring he bore every burden as it came, handling vaster sums of money than any official in his place before or since, and for an average pay about half what is now provided. He was the founder of the work of this Bureau; and in the fulfilment of his duties endured with dauntless courage the brunt of a sore conflict, with clear-sighted devotion breaking the way for those who should come after. And finally he was a religious musician, a writer of tunes that cannot die—a "sweet singer of Israel," whose name will live in dear regard while men shall sing in English speech to the worship of God. The exquisite quality

of this high gift has made him to rank among the purest, choicest souls of his day. Teacher of youth, general of soldiers, manager of mills, treasurer of the State, first chief of this Bureau, musician and writer of sacred songs that live perennial in the Christian heart, what parallel to the man and his career in all these lines shall be found in our time?

PART I.

CO-OPERATIVE DISTRIBUTION

IN

GREAT BRITAIN.

PART I.

CO-OPERATIVE DISTRIBUTION IN GREAT BRITAIN.

Upon an order introduced in the Massachusetts House of Representatives, January 29, 1885, by Mr. Henry M. Cross of Newburyport, a Resolve was reported by the Committee on Labor, passed by both branches, and approved March 12, 1885, directing the Chief of the Bureau of Statistics of Labor "to prepare and publish for distribution a pamphlet descriptive of the history, methods, and present condition of co-operative distribution in Great Britain." Under that Resolve the account contained in the following pages has been prepared, and, besides its publication in pamphlet form, is also presented as Part I. of the Seventeenth Annual Report of the Bureau.

The publication directed by the Resolve relates to facts and not argument, and it has been our aim to present these facts with fulness. For that purpose we have not hesitated to reproduce the statements of others, generally in their own language, whenever such statements were concise presentations of the particular facts desired.

In regard to certain phases of the subject it has seemed best to let co-operators speak for themselves rather than to embody their ideas in our own words. In all such cases we have given due credit in foot notes, and in further acknowledgment we desire here to mention our indebtedness to the pamphlets and other publications of the Central Co-operative Board, Manchester, England; the annual reports of the Co-operative Congresses of Great Britain; the Annuals issued by the English Co-operative Wholesale Society; the works of George Jacob Holyoake, and to the little manual, entitled "Working Men

Co-operators", by Arthur H. Dyke Acland and Benjamin Jones.*

The publications of the Central Co-operative Board, particularly those relating to practical details, are invaluable to any one desiring to engage in co-operative distribution. Full lists of these publications may be obtained upon application to the Secretary, City Buildings, Corporation Street, Manchester, England. The reports of the Congresses and the Co-operative Annuals contain much valuable statistical matter. The works of Holyoake, published by Trübner & Co., London, and to be obtained through any bookseller, are exhaustive and authentic as relates to the history of the co-operative movement in Great Britain, while the manual by Acland and Jones is a brief and inexpensive, yet exceedingly useful handbook covering the whole subject.

WHAT IS CO-OPERATION?

At the outset it is proper to define exactly what the subject is that we are to treat. The term co-operation as applied in practice at the present day is not used in its strict etymological meaning. Nor is co-operation as at present conducted what its early advocates proposed. Etymologically considered co-operation means *to labor together*. It has an industrial significance. On the contrary the co-operation of the present has won its greatest success in commercial rather than industrial directions. Its application to productive industry is still largely experimental, and the experiments that have succeeded are, in most instances, not purely co-operative.

Co-operation as proposed by its early advocates contemplated a social transformation, introducing into the operations of industry and trade, that is, into the operations of production and distribution, such principles as would overcome the evils that attend competition. It aimed to reconstruct society upon the communistic basis, its motto being "each for all and all for each," rather than the too common one of "every man for himself." Individualism it deemed contrary to the general good, and it sought to substitute for individualism some system of joint endeavor through which the laborer, the capitalist, and the con-

* Cassell & Co., Publishers, London, Paris, and New York, 1884.

sumer should be brought into relations of mutual help rather than remain in their usual position of rivalry. Ideally, something like this is still hoped for by ardent co-operators, but practically no such social transformation has yet taken place. Competition still flourishes, and the reconstruction of society upon the communistic basis is not to-day the chief end of co-operative endeavor. The co-operation of the present that is highly successful, and which we are mainly to consider here, relates to the distribution of products rather than to production. It is co-operative trading, not co-operative labor, if, indeed, the latter term is permissible. We shall show hereafter how success in co-operative distribution has, in some cases, paved the way to experiments more or less complete and more or less successful in co-operative production, but it is chiefly with distribution that we have to deal; and it is in this field that co-operation, in the sense of mutual effort, has won its greatest triumphs. The benefits obtained by those who have engaged in this form of co-operation are so great that its history, methods, and present condition are well worth our study and will amply reward our investigation.

One who by virtue of his experience, and his services to the co-operative movement, is certainly entitled to formulate a definition has presented the following:

“Co-operation, in the social sense of the word, is a new power of industry, constituted by the equitable combination of worker, capitalist, and consumer, and a new means of commercial morality, by which honesty is rendered productive.

“It is the concert of many for compassing advantages impossible to be reached by one, in order that the gain may be fairly shared by all concerned in its attainment.” *

This definition which is comprehensive, while no doubt embodying the author's views, would not be accepted by all co-operators, many of whom are unwilling to admit the claim of the consumer, *as a consumer*, to a share of the profits arising from productive effort. However this may be, all are agreed that in co-operative *distribution* the consumer should share in the profits derived from his trade. This feature is essential in modern co-operative distributive associations and distin-

* Holyoake. History of Co-operation, Vol. I., page 2.

guishes them from early attempts in this direction, and from joint stock associations.

Joint stock associations divide profits by payment on capital, that is, *on shares*. Co-operative distributive associations divide profits on *purchases*, not on shares, and pay to shareholders *a fixed rate of interest* on the capital invested.

Applying to the scheme of co-operative distribution the spirit of the last clause of Mr. Holyoake's definition just quoted, we may define it as:—A union of many consumers for the purpose of securing in the purchase of commodities advantages impossible to be obtained by one, through an equitable division of the profits derived from their purchases.

Such co-operative unions are upon the continent of Europe termed “consumers' societies.” As has been said by another, “they have succeeded in making 20s. of earnings go as far as 22 or 23 in an ordinary shop. The true problem of co-operation lies deeper, that is, how to secure the original 20s. in workshops under their own management.”

Leaving for the present this deeper problem we shall describe the manner in which the distributive societies of England have grown up, their mode of operation, and what they have accomplished. Afterward we shall glance briefly at the other phases of the co-operative movement.

HISTORY OF THE MOVEMENT.

At the beginning of the present century the condition of the common people attracted the attention of certain social philosophers who, seeing the misery that often existed among the working classes, endeavored to devise some scheme for the reconstruction of society upon more favorable conditions. Among these social reformers Saint Simon and Fourier, in France, and Robert Owen, in England, each in his own way, hoped to re-create society upon an ideal basis by a sudden and radical change from existing conditions. It is now seen that it is only by gradual steps that society advances, and that numberless influences and the slow progress of years are necessary to effect important social changes. Therefore it is not surprising that none of these schemes succeeded, although some of them were, in their day, exceedingly attractive.

The influence of Robert Owen upon the co-operative move-

ment in England was immediate and important. He has, indeed, been credited with the origin of the term co-operation as applied to industry. "In no literature," says Holyoake, "before the active days of this social devisor, does any trace of this new industrial shibboleth, co-operation, appear." * "The principles of co-operation were first put together and clearly stated by Mr. Owen in his earliest writings." †

But by co-operation, Owen meant a communistic organization of society for the mutual benefit of all. Between 1820 and 1830 great enthusiasm was aroused in England in this direction, having its practical outcome in the establishment of communities upon the co-operative plan. The first newspaper organ devoted to the theories then in vogue was the *Economist* in 1822, although Owen and others more or less inspired by him had previously published pamphlets unfolding their plans for social improvement. William Thompson, in 1827, produced a little work called "Labor Rewarded," in which he aimed to set forth a scheme for a more just distribution to labor of its share of product, and presented directions for the establishment of co-operative companies. Later the Combes and Robert Dale Owen, among others, aided the movement with their pens.

In 1824 the London Co-operative Society was formed. In its rooms were held meetings for discussion, and it also undertook the sale of goods made by provincial societies. In 1826 the Co-operative Magazine and Monthly Herald was established, this being the second co-operative organ in England, and two years later the Co-operator, a four-paged penny paper, was published. The latter, however, failed in 1830. Meantime other periodicals and a number of societies were established for the discussion and advancement of co-operative views.

The first co-operative congress was held at Manchester in May, 1830. Fifty-six societies were represented by delegates. These societies comprised 3000 members, who had by co-operative trading and weekly contributions acquired within fifteen months £6000 capital.‡ Congresses continued to be held for several years.

* History of Co-operation, Vol. I., page 53.

† Co-operative Miscellany, No. 2, 1830.

‡ History of Co-operation, Vol. I., pages 150, 151.

There were said to be nearly 300 societies in Great Britain in 1830, their aggregate membership being about 20,000.

Most of the periodicals started before 1830 had ceased to exist by that year. In 1832 Owen began the publication of a new paper called the *Crisis*, and from time to time thereafter others appeared in the British Provinces.

The early attempts at co-operation took various forms. It seemed as if those interested, intoxicated with the hope of a brighter world than that with which they were unhappily familiar, were ready to accept any scheme, no matter how wild or ill-digested, that had in it the promise of improvement. The enthusiasm with which these schemes were embraced afforded in most instances a striking contrast to the failure which finally overtook them. But the discussion of the general subject in congresses and through the medium of the press widely disseminated co-operative views. Most of the enterprises suggested were based upon the communistic plan. The central idea around which clustered the co-operative experiments projected by the leaders of the movement was in those days the re-casting of society upon the basis of a community of united interests. But, as Mr. Holyoake has pointed out, "these dreams were postponed on the part of many, and were regarded as separate objects by more, and not regarded at all by the majority of co-operators, who had formed stores and established numerous manufacturing societies for the mutual advantage of the members." *

The following table shows existing registered co-operative stores established before 1844, with the date of their establishment, and the date when the profits were first divided on purchases. †

* History of Co-operation, Vol. I., page 188.

† Workingmen Co-operators, page 23.

Existing Registered Co-operative Societies established before 1844.

Date established.	NAME OF SOCIETY.	When profits were first divided on purchases.
1777 .	Govan,	1878
1795 .	Hull A. C. Mill,	1855
1801 .	Hull S. C. Mill,	Not known.
1801 .	Whitby Corn Mill,	Not known.
1812 .	Lennoxton,	1813
1816 .	Sheerness Economical,	1863
1817 .	Devonport U. M.,	1818
1821 .	Larkhall,	Profits divided equally.
1827 .	Meltham Mills,	1827
1828 .	Bridgeton,	1828
1829 .	Forfar, East Port,	1861
1829 .	Huddersfield W.,	Not known.
1830 .	Bannockburn,	1866
1830 .	Huddersfield B.,	1834
1831 .	Forfar, West Town,	1863
1832 .	Foleshill L. L.,	1865
1832 .	Foleshill S. S. R.,	1836
1832 .	Ripponden,	1850
1832 .	Stockport Great Moor,	1832
1833 .	Arbroath,	1861
1834 .	Forfar, West Port,	1863
1834 .	Kirkheaton,	1867
1836 .	Glasgow, St. Rollox,	1836
1837 .	Devonport Coal,	Profits divided equally.
1838 .	Almondbury,	1840
1838 .	Leslie Bread,	1872
1839 .	Hawick,	Shortly after starting.
1840 .	Darvel,	1859
1840 .	Hepworth,	Not known.
1840 .	Leslie,	1864
1840 .	Netherton,	Not known.
1840 .	Tillicoultry,	1864
1842 .	Freuchie,	1862
1842 .	Galashiels,	1847
1842 .	Middleton-in-Teesdale,	1874
1843 .	Falkland,	1865
1843 .	Kettle,	1863

Most of the early stores did not succeed. The reasons for their failure were various. The law did not afford co-operative enterprises adequate protection, and through its technicalities unprincipled men might easily embezzle the funds of the society and escape punishment. Non-adherence to the cash system was in many cases disastrous. But, besides these difficulties under which co-operative stores labored, the great obstacle to success was the defective plan upon which they were

based. Most were joint stock concerns dividing profits among shareholders only, and no arrangement was provided for capitalizing profits upon the plan of allowing dividends to remain undrawn as interest-bearing deposits. This we shall hereafter see was remedied in the Rochdale scheme of co-operative distribution which has become so successful. By reference to the table just presented it will be noticed how few of the early stores still remaining divided profits on sales until after the year 1844 in which the Rochdale scheme was made public. Many early stores failed, also, because after the first enthusiasm was exhausted members had no sufficient motive to continue their work.

After the social reformers whom we have named — Saint Simon, Fourier, and Owen, — came Leroux, Cabet, Proudhon, and Greaves, and, finally, M. Louis Blanc, who, in 1840, published “*L'organisation du Travail*,” a work which gave a decided impetus to co-operative endeavor.

Blanc proposed to reorganize labor under government direction so as to regulate production and ultimately to prevent competition. In brief, he contemplated the establishment of social factories, under government patronage and control, upon a plan at first circumscribed but adapted to indefinite expansion. The regulations governing these social factories were to be made by legislative enactment and to have the force of law. All workmen of good character were to be eligible to admission to these factories, limited only to the number possible to be employed with a given amount of capital. Salaries were to be equal.

Mutual interest in the success of the factories was to be secured by the mode of division of profits which were to be apportioned in three parts, one to be distributed to all members equally; one set aside for support of the aged or incapacitated and to alleviate the effect of industrial crises; and the third part to be used for the extension of the industry, the idea being so to expand the business as to furnish employment to all who might desire to join.

Upon the scheme proposed “each social factory may be composed of different businesses grouped round some great industry, parts of the same whole, obeying the same laws, and sharing in the same advantages.”

M. Blanc contemplated the admission of capitalists to these associations or factories upon the basis of a fixed interest on capital invested, but not to share in profits except as laborers.

With respect to M. Blanc's influence upon the growth of the co-operative idea, Mr. Thomas Hughes, after pointing out that his scheme is characterized by the French tendency of reliance upon government to do for the people what they despair of doing for themselves, very justly says :

“ Nevertheless it marks a great epoch in the history of social reform by the clearness with which it pointed out three principles ever since more or less distinctly felt to be the life blood of co-operative efforts : first, the looking to the association of workers carrying on their accustomed work in common as the true means of raising their social condition through the use of the profits arising from their work ; second, the restricting the payment of capital to a fixed rate of interest, and giving the capitalist security for his capital in lieu of profit ; third, the elimination of the ruinous effects of competition, and the substitution of a healthy emulation in its place, by the union of different establishments carrying on the same industry by common centres by means of which diverse industries may also be united. Thus, setting aside the arbitrary rule of an absolute equality of salaries, which experience has not justified where the attempt to act upon it has been tried, and which seems to err as much by sacrificing the individual to the body as the present inequality of payment errs in sacrificing the body to the individual, — this *organisation du travail* may still be regarded as the prolific egg out of which the ideas of co-operation sprang in France, and which has had no inconsiderable influence on the ideas of co-operators in England.”

Our review has now brought us to the date of an important event in the history of co-operation in England. The experiments in communistic co-operation had practically failed. A few stores, principally upon the joint stock plan, still remained, but there was no cohesive force binding them together. There was, however, considerable co-operative sentiment existing in the country, waiting a favorable moment to spring into activity.

Not entirely unfamiliar with the theory of co-operation were the weavers of Rochdale, 28 of whom, massing their meagre capital of £1 each, were to engage in a scheme of co-operative distribution upon a plan so practical and with an energy so

determined as to carry the assurance of success. Under the name of "The Rochdale Pioneers," these weavers secured quarters in an old weavers' shop in Toad Lane, Rochdale, and, with the limited stock of groceries purchasable with their united capital of £28, began business in 1844. The insignificant character of their enterprise provoked the ridicule of the public.

"When the day and hour for commencing business arrived the little party assembled within to take part in the ceremony were abashed at the largeness of the crowd assembled to witness it. Some delay took place before any one could muster up courage to take down the shutters, and when at last the 'store' and its contents were exposed to public view, all Toad Lane was in a roar. Loud and long were the shouts of derision that rose from a host of 'doffers,' a species of street boy peculiar to the clothing districts, who, set on by persons who ought to have known better, stared through the windows or blocked up the doorway, evincing their characteristically precocious sense of the ridiculous by the nature of their comments on the modest display of the 'owd weavers' shop.'" *

But success, instant and unmistakable, overcame ridicule. Not long were these 28 weavers left unsupported in their effort to supply themselves with groceries free from the adulterations and imperfections found in those furnished at the ordinary shops, and, at the same time, divide among themselves the profits accruing from their sale. A scheme so practical, conferring benefits so great, at once attracted new members. The next year the association numbered 74, and the joint capital rose to £181. The whole story of their progress is most eloquently told by statistics, and we therefore present it in that form, availing ourselves of the following table: †

* W. T. Thornton. On Labour, page 376.

† Reproduced from "On Labour," Thornton, page 377.

Statistics of the Rochdale Equitable Pioneers.

YEAR.	No. of Members.	Funds.	Business done.	Profits.
		£	£	£
1844	28	28	—	—
1845	74	181	710	22
1846	80	252	1,146	80
1847	110	286	1,924	72
1848	140	397	2,276	117
1849	390	1,193	6,611	561
1850	600	2,299	13,179	880
1851	630	2,785	17,638	990
1852	680	3,471	16,352	1,206
1853	720	5,848	22,760	1,674
1854	900	7,172	33,364	1,763
1855	1,400	11,032	44,902	3,106
1856	1,600	12,920	63,197	3,921
1857	1,850	15,142	79,788	5,470
1858	1,950	18,160	71,680	6,284
1859	2,703	27,060	104,012	10,739
1860	3,450	37,710	152,063	15,906
1861	3,900	42,925	176,206	18,020
1862	3,501	38,465	141,074	17,564
1863	4,013	49,361	158,632	19,671
1864	4,747	62,105	174,937	22,717
1865	5,326	78,778	196,234	25,156
1866	6,246	99,989	249,122	31,931
1867	6,823	128,435	284,910	41,619

Not only did the business expand financially but its scope was broadened. The original stock in trade was confined to the leading staple groceries, such as flour, oatmeal, sugar, and butter. The following table shows the departments afterward added and the date of opening each :

DEPARTMENTS.	Date of opening.
Linen and woollen drapery,	1847
Butchering,	1850
Shoe and clog making,	1852
Tailoring,	1852
Coal dealing,	—
Baking,	1867

Ten or more branch stores are now carried on in the town of

Rochdale, and extensive premises owned by the association have taken the place of the old weavers' shop of 1844.

From the first, part of the profits were set aside for educational purposes, and an extensive library and liberally equipped reading room are now maintained.

The following statement exhibits the condition of the association in 1884, and when contrasted with its humble origin is itself a striking justification of the principles upon which the business has been managed :

Members.

Number of members, December 31, 1884,	11,161
---	--------

Liabilities.

Share capital, December 31, 1884,	£329,470
Loan capital, December 31, 1884,	£14,561
Reserve fund, December 31, 1884,	£2,605

Assets.

Value of saleable stock, December 31, 1884,	£28,593
Value of land and buildings and fixed stock, December 31, 1884,	£53,442
Investments, December 31, 1884,	£242,432

Trade and Profits.

Received for goods sold during 1884,	£262,270
Total net profit made during 1884,	£36,992
Average dividend paid per £,	2s. 9½d.
Applied to educational purposes during 1884,	£920
Applied to charitable purposes during 1884,	£118
Subscriptions to Central Board,	£46 0s. 10d.

The Rochdale store was not the first to engage in co-operative trade, as we have already shown, nor was it the first to divide profits on sales. But whether the time was more propitious or the character of its founders more favorable to success, it became, unlike its predecessors, true to its name, the pioneer of the distributive associations now numbered by hundreds in Great Britain. Unlike the joint stock companies the cardinal principles of co-operative distribution were observed by them : — *All profits to be divided on purchases, and all purchasing members to be made shareholders with a fixed interest on the capital invested. The cash system to be strictly adhered to.*

A single paragraph by Holyoake gives a synopsis of the early and later phases of co-operation in Great Britain, and shows the trend of co-operative endeavor after the year 1844. He says :

“The term co-operation was at first, as the reader sees, used in the sense of communism, as denoting a general arrangement of society for the mutual benefit of all concerned in sustaining it. Later, the term co-operation came to be restricted to the humbler occupations of buying and selling provisions.”*

The germ planted at Rochdale was not long in developing.

“It was not, however, till the great revolutionary crisis of 1848-9 that any strong impulse was given to co-operation in England. * * * Co-operation at this time took a start (in the north of England) as noteworthy, and more permanent in its results, than the famous Parisian movement, which, after surviving the barricades, withered in the first year of the second empire.

“The stores in Lancashire and Yorkshire rose rapidly from units to tens, from tens to hundreds. The need of some sort of federation began to be felt, and conferences of neighboring societies to be held in different localities to consider questions of organization and joint action. For, as the societies grew in number and importance, and their trade began to extend beyond the supply of the simplest necessities of life, the state of the law was found to press very severely upon them. They were hampered at every turn, and found themselves going into action, as it were, in the great struggle for existence, not as men in proof armor, but as men in fetters.”†

The remedy was at hand. Workingmen throughout England were seeking through legislation to obtain wider opportunities and the freedom of action that had been denied them. The years 1844, 1846, and 1847 witnessed the passage of important statutes affecting factory administration, the hours of labor, and the formation of friendly and trade societies, and saw, also, the repeal of the corn laws. The progress of the working classes was once more under discussion and their condition grew brighter day by day. And now Mr. Frederic

* History of Co-operation, Vol. I., page 68.

† Thomas Hughes. Lecture on the History and Objects of Co-operation (Co-operative Board Pamphlets), page 7.

Maurice, with others attracted by his energy and enthusiasm, came forward in aid of the co-operative movement. It was fortunate that when the need of favorable legislation was most pressing the influence of Maurice was enlisted. For he, from his position as reader at Lincoln's Inn, was able to interest many young and ardent lawyers, members of his congregation, in the progress of the working classes, and to impart to them his own firm conviction that co-operation was to be an important element in that progress.

In 1850 a society for promoting workingmen's associations was formed, Mr. Maurice being at its head. Co-operation it declared to be "the practical application of Christianity to the purposes of trade and industry." This society became an active force in behalf of the co-operative movement in the practical direction it had now taken. Attracting to itself many co-operators of the Owen school and numbering among its members, besides Maurice, such men as the late Canon Kingsley, J. M. Ludlow, and E. V. Neale,* its attention was immediately devoted to securing the needed reform in law so as properly to guard and foster co-operative societies.

The first act affording an adequate legal basis for such societies was passed in 1852, 15 Victoria, 31. The efforts put forth to secure this legislation drew together those engaged in co-operation throughout Great Britain. It is estimated that at the time of its passage about 140 co-operative stores were in existence. The society under Maurice's administration became a sort of working co-operative centre, and in its hall, July 26, 1852, was held a conference of delegates from the provincial societies, at which the new law was discussed, the establishment of a wholesale supply depot considered, the need of a newspaper organ debated, and other important matters brought forward. The first four years' work under the leadership of the London society is thus summarized by Mr. Hughes :

"Co-operative societies had been legalized for all purposes, except dealing with land and banking. The moral side of the movement

* Now Secretary to the Central Co-operative Board. Mr. Ludlow is now Registrar of Friendly Societies. The members of this society were known as Christian Communists or Christian Socialists. In Parliament, Messrs. Walter Morrison, Thomas Hughes, and Messrs. Slaney, Henley, and others rendered material aid to the society in its efforts to secure legislation.

had been brought into prominence, and principles had been accepted as essential, and incorporated into the constitution and rules of the societies, which have retained their hold, and are to this day appealed to as fundamental. And lastly, the necessity for closer union between the societies had been demonstrated and considerable advances made towards its attainment."

In 1857, Mr. Holyoake published his "History of Co-operation in Rochdale," a work which was widely read, and thus exerted an important educational influence in behalf of co-operative progress.

In 1862 the number of societies in Great Britain was estimated at 450; their estimated membership being 90,000; their share and loan capital, £450,000; their annual sales, £2,350,000; and their profits, £166,000. In this year parliamentary returns were first made to the Registrar, and thereafter annual statistical statements were presented.

The Industrial and Provident Societies Act of 1862 gave co-operative societies a corporate existence, and permitted one society to hold shares in another. This gave the requisite legal basis for the formation of co-operative wholesale societies, which are federative associations, their capital being in shares held by the societies composing the federation. Such an institution had long been needed to render the independence of the retail stores more complete, to allow them to disregard the jealousy of rival traders who exerted their influence against them with private wholesale dealers, to enable them to secure supplies of undoubted purity, and, while utilizing the surplus capital accumulating in their hands, to permit them to save to themselves the profit arising in the wholesale trade.

After much discussion the English Co-operative Wholesale was established in 1864, with a capital of £999, which was soon largely increased. Attempts at wholesale co-operative distribution had previously been made, but never upon the broad plan now adopted. Such attempts had failed. The scheme now devised was perfectly logical. It was in principle simply an extension of the plan upon which the retail business had been conducted. The relation of the retail societies to the wholesale is exactly analagous to the relation existing between individual members and the retail, and will be more fully explained hereafter. We are now dealing with the history rather than

the economics of the movement. The Scottish wholesale was founded in 1868. The formation of these wholesale societies marks an epoch in the progress of co-operation, and established the commercial autonomy of the co-operative organization.

From time to time experiments in co-operative production were made, which, in accordance with our plan, we shall here disregard, presenting their salient points later, and for the present confine ourselves to co-operative distribution.

In 1869 a central co-operative board was formed and annual congresses composed of delegates from the societies represented in the board have since been held. The Central Board at first consisted of two sections, the London and the provincial, but was afterwards organized as a Union composed of representatives from six districts or sections, and sustained by annual subscriptions from the societies. This Union, in conjunction with the congresses, exerts a strong cohesive force upon the societies, and also becomes an efficient agent in propagandism. To operate especially in the latter direction the Southern Co-operative Guild, having its headquarters in London, was formed in 1877.

The unity of action secured among co-operators by the organization described proved of the utmost value. The annual discussion in the Congresses of matters of peculiar interest, and the union of delegates from sections widely separated but engaged in the same work and actuated by similar motives, gave the movement a vitality it previously lacked and materially aided its growth and prosperity.

Since 1860 a newspaper organ of co-operation has been maintained. This is now owned by the societies.

Before closing this historical review it is proper to notice a distinct branch of co-operative distribution in Great Britain, — that conducted by societies on the so-called civil service plan. There are several of these, the largest in point of sales being the Civil Service Supply Association, and the Army and Navy Society, of London, the latter differing only in having been founded by officers of the army and navy instead of by employés in the civil service.

In reality these societies are consumers' joint stock distributing agencies, dividing no profits on purchases, and selling, not at the ruling market rates, as do the stores on the Rochdale

plan, but at the lowest prices consistent with the payment of expenses and a fair interest on capital invested.

The first association on this plan was formed in 1866, and the movement, originated by government employés for their mutual benefit, has made rapid progress.

The trade of these associations is not confined to shareholders, although profits are divided only on shares in the form of interest on capital invested, nor do they attract the trade of workingmen. They conduct a very extensive business at a low expenditure for expenses, and are of great benefit to the classes supporting them. The volume of their trade has been estimated to bear a similar relation to their members' income that the trade of the working class societies bears to their members' income. Co-operation in London is confined to these societies, except in a few outlying districts inhabited by workingmen.

The growth of the civil service societies was stimulated by the success of the stores established on the Rochdale plan, and while they have not adopted some of its vital features, and have confined themselves to cheap buying and selling on the joint stock rather than the co-operative basis, they still have interests in common with the workingmen co-operators, and three of these societies have joined the Co-operative Union. The essential difference between them and the great body of workingmen's societies will appear in our subsequent analysis. As part of the general movement their work cannot be overlooked in this review.

Speaking of the progress of co-operation since 1824 it has been said :

"The record of these sixty years of co-operative work is a record of work done under the influence of many different motives ; but if it could be written out in full, it must contain the names of many unselfish and earnest men, whose names were never known beyond their own town, and even there may now have been forgotten. In the earlier days men were fettered by laws which prevented their combined action, and there was little to protect them against fraud. There were taxes on newspapers, few even decent schools, no co-operative manuals or literature. Now all this is changed." *

* Workingmen Co-operators, page 30.

To which it may be added that whereas in the early days the theoretical or ideal side of co-operation was presented and the practical insufficiently studied, it was only after co-operators set themselves squarely at work upon the practical side of the problem, availing themselves of the avenues easily open to them, and gradually pushing out into wider fields of endeavor as one obstacle after another was overcome, that success was won. To-day while the ideal is not forgotten and leading co-operators still look forward to heights yet unattained and to the entire reorganization of all industry upon the co-operative basis, still the effort appears to be to accomplish this through the gradual expansion of the co-operative organization along lines proved by experience to be safe, and not by any sudden or radical change in the structure of society. The co-operation of the present, as represented in the discussions of the congresses, is conservative as well as hopeful, practical rather than ideal, and while full of faith in the future is inclined to build upon sure foundations a structure whose stability is definitely assured.

THE FOUNDATION IN LAW.

The legal basis of co-operation in the United Kingdom rests at present upon the following statutes now in force: The Industrial and Provident Societies Act of 1876; the Customs and Inland Revenue Act of 1880; and the Provident Nominations and Small Intestacies Act of 1883.

These Acts contain provisions for the formation of co-operative societies; set forth the rights of such societies, and the rights of their members; and prescribe the duties to be performed by the societies.

It is required that in the formation of a society application shall be made to the registrar appointed by the government. A separate registrar is provided for England and Wales, for Scotland, and for Ireland. Blank forms of application are furnished, specifying twenty distinct matters relating to the conduct of the society's business, which must be incorporated in its rules, two copies of which signed by seven persons and the secretary, who are also to sign the application, must be forwarded with the latter to the registrar.

After registration the society becomes a body corporate, may sue and be sued, and may hold and deal with any kind of property, including shares in other societies and companies and real estate to any amount.

The rules of a society bind its members, notwithstanding they may have signed no assent to them. The rules may be amended in the manner originally provided for such amendment, but any amended rule must be registered. Application for such registration must be made upon a form supplied by the registrar, and a fee of 10s. is charged.

A society may sue its members. It may make a contract, and a contract made by it is binding as if similarly made by an individual, and when made under its seal, or by a writing executed by a person authorized to sign in its behalf, or verbally by one duly authorized to speak for the society.

Any or all of its shares may be made withdrawable. It may carry on any trade, except banking, including trade in real estate. It may apply its profits in accordance with the provisions contained in its rules.

It may, if the rules so provide, receive money on loan from any one, to an amount limited by its rules, or it may accept deposits, limited to 5s. in any payment, and to £20 for any depositor, payable at not less than two days' notice.

It may also, if its share capital is not withdrawable, carry on the business of banking.

It may make loans to members on real or personal security. It may also invest on the security of other societies or companies, save those only where liability is unlimited.

It is exempt from the payment of income tax on profits, provided the number of its shares is not limited by its rules or practice.

It may, by procedure duly set forth in the Act, unite with any other society, or may acquire the business of any such society, or may change its organization into that of a company.

It may provide the mode of settlement of disputes that may arise between itself and its officers or members.

A society may dissolve itself by an instrument signed by three-fourths of its members, or dissolution may be effected by a three-fourths vote at a general meeting called for the special purpose. If such dissolution be voluntary the resolution must

be confirmed at a second meeting, but if on account of debts, the action of the first meeting is sufficient.

If the society is in dissolution on account of debt, hostile proceedings to seize the property may be stayed.

Minors, if not under the age of 16, may become members, and may act as if of full age, but cannot hold office.

Members are not liable individually for the society's debts, and their liability in any event is limited to the amount remaining unpaid on shares legally theirs, or which they have agreed to take. They are not liable for debts contracted subsequent to transfer or withdrawal of the shares held by them; nor for debts existing at date of such transfer or withdrawal, unless the other assets are insufficient to meet the liabilities of the society.

The number of shares permitted to be held by an individual or company may be fixed by the rules but must not exceed in the total the nominal value of £200. The number of shares permitted to be held by a society is unlimited, and likewise there is no limit to the amount which may be received as a loan from an individual or company, except the limit, if any, fixed by the rules.

A member may by instrument duly recorded nominate the persons who shall take his investment in the society at his death, provided at the latter event this investment in loans, deposits, or shares does not exceed £100, and a nomination may be varied or revoked. If no nomination subsists in the event of a member dying intestate, the committee of management become administrators of the fund.

Whenever upon the death of a member his investment exceeds £80 the Commissioners of Inland Revenue are to be notified.

Upon application to the registrar members may secure an official investigation into the affairs of the society.

Every society must have a registered office with its name conspicuously displayed outside. A change of location must be at once reported to the registrar. It must have an engraved seal bearing its name, must have its accounts audited at least annually, and a copy of its last balance sheet and auditors' report must be constantly displayed in its office. Annual returns of its affairs must be made to the registrar, and a copy furnished, when applied for, to all interested parties.

Its books may at any time be inspected by any one interested in its funds.

Special returns are required if the society conducts a banking business.

Copies of its rules must be supplied by every society to any applicant, at a price not more than one shilling.

The duties set forth in the act must be performed by the society under penalties. These penalties affect the society and its officers and vary from £1 to £50, and are in some cases cumulative during the time the neglect continues.

THE RETAIL STORE.

The unit of the co-operative organization is the retail store. In starting such a store in a new district in Great Britain it is considered desirable to make use of the advice of the Co-operative Union. At the present day its work has become so systematized through experience that its help is of great benefit to the unpracticed co-operator. It has prepared model rules for the administration of co-operative societies which are in harmony with the requirements of the English law, and it is ready at all times to aid every new enterprise by showing those interested every thing essential to the successful establishment of a store.

FIRST STEPS.

In the first place, after a few persons have become impressed with the advantages of co-operative distribution, and have determined to found a society, a meeting is usually held to awaken public interest and to secure members. Speakers may be obtained from the Co-operative Union or from the Southern Co-operative Guild. The advantages of co-operation are explained and every effort made to stimulate interest in the movement. An informal organization is effected, collectors appointed, and the work of securing the required capital begins.

CAPITAL.

The co-operative scheme rests on the basis of cash payments. The outfit and goods are bought for cash and no sales on credit ought to be allowed. Considerable capital, therefore, must be paid in before the store opens. The amount to be raised and

the number of members to be secured before business is begun will depend on circumstances. It is considered that 100 members, with £130 capital, and a guaranteed trade of from £40 to £50 per week are required to ensure expenses and a dividend if the store is to be constantly open. But the beginning may be much more humble. The store may be open only at certain times, for instance, evenings, or on particular days in the week, thus reducing the expense of a storekeeper by employing only a portion of his time. A member who is otherwise employed may, if capable, serve as storekeeper in the evening, or a member's wife may be selected for the position.

It is deemed essential that, however established, the store should depend for its prosperity on the support of actual members, and not rely upon loans or gifts from those who may have a sentimental interest in the scheme. The trade of some members may at first be limited. If in debt to private traders they cannot at once transfer their entire patronage to the co-operative store. Slowly they may by economy extinguish their debt and increase their trade. An independent beginning of the store, no matter how humble, and a gradual expansion as business increases is always advised.

SHARES.

The number of shares held by each member may be not less than one nor more than 200, the value of each share being £1. A fixed rate of interest is paid on capital invested, usually five per cent, and members are encouraged to leave undrawn the dividends accruing on their purchases, such undrawn dividends being added to the capital, thus permitting an increase of the business. The store in this way performs the functions of a savings bank of deposit, thrift on the part of members is stimulated, and while on one hand the evils of debt are prevented by adherence to the rule of cash payments, on the other members form the habit of saving, by the inducement offered to allow their dividends to go on deposit at a fair rate of interest.

NATURE OF SHARE CAPITAL.

To determine the nature of the share capital, that is, whether it shall be withdrawable or only transferable, opens an import-

ant question which the new society must meet and settle. Its bearings are considered in the following :

“ In the general rules three cases are provided for:—first, where all the shares are to be withdrawable; second, where they are all to be transferable; third, where some are to be transferable and some withdrawable. In the early days of co-operative societies the law compelled them to make their shares withdrawable. The early societies were accordingly all formed on this principle; and the large majority of those formed after the alteration of the law, when shares were allowed to be made transferable in the case of joint stock companies, followed the example of their predecessors. Cases, however, have occurred where rumors have been spread as to the solvency of such a society; a run has taken place upon their funds, the more selfish members seeking to secure themselves from sharing in any loss, careless of the result to their fellow members; and the society, having almost all its capital locked up in buildings, fixed stock and trading stock, has had to stop payment, though perfectly solvent, so as to gain time to realize its assets. Some of the older societies, hampered by the fact of their members having become accustomed to withdrawable shares, have met this difficulty by altering their rules, and making a portion of their capital transferable.

It is, however, generally considered among co-operators that in the case of new societies it is much the best plan to make all the capital transferable. To meet the case of members leaving the locality, or wishing to draw out a part of their capital in order to provide for any given expenditure, as in the case of illness, you should have a rule, such as is given in the model rules above-mentioned, enabling the committee to purchase the shares of members at a price not exceeding their par value, *i. e.*, the sum paid up on them. In this manner the capital becomes in fact withdrawable, except in the one case of a panic as to the financial position of the society, in which case it is only fair that, if there be any ground for alarm, all the members should share equally in any loss sustained. You may also very well have a rule empowering the committee to take money on loan from members, after they have contributed some definite amount to the share capital, to be withdrawable on demand, or after so many days' notice, according to the amount withdrawn.” *

Many co-operators think that the matter is best settled by

* Walter Morrison, Esq. Village Co-operative Stores (Co-operative Board Pamphlets).

making every member have one non-withdrawable transferable share of £1, and let his remaining shares, which he acquires through undrawn dividends or by other investments, be withdrawable. *

PAYMENT OF SUBSCRIBED CAPITAL.

Not all the money subscribed for shares need be paid up at once. It is usual to make payments at the rate of 3*d.* per week. In some societies subscribers do not acquire full membership until an entire share or even several shares have been paid for in full. In general, however, after a shilling has been paid in members are allowed to have full privileges. Concerning this matter, Mr. Morrison, in the pamphlet already quoted, says : —

“Urge your members to pay up their shares in full if they can, in order to simplify your accounts. It may be useful to this end to provide a special rule that no interest will be allowed on any sum under £1,† so as to induce a member who may have £1 18*s.* invested to pay up the balance of two shillings at once. You should also adopt the provision in the general rules that no dividend on purchases shall be paid to any member until he has some definite sum, to be fixed by a special rule, invested in the share capital; all such dividends being credited to him until this amount is made up. You will require an average capital of £10 per member. If you can rely upon the richer members contributing more than this sum, you might fix the minimum amount which each member must invest at perhaps £5.”

REGISTRATION.

Before beginning business the society must be registered at the government registration office for industrial and provident societies. No registration fee is charged.

THE EXECUTIVE COMMITTEE.

The selection of the executive committee is a matter of scarcely less importance than that of raising the required capital. This committee appoints the storekeeper and other employés, controls the purchase of the stock in trade, overlooks the finances of the society, and is, in fact, entrusted with the entire supervision of its affairs. The nature of these duties suggests

* Workingmen Co-operators, page 36.

† Or, more explicitly, on any fractional part of a £, thus supplying a motive to cause subscribed capital to be fully paid up.

the care that ought to be taken in selecting the men who are to perform them. The success of the society will largely depend on the efficiency and honesty of the committee. It may consist of from seven to twelve members who are usually elected at quarterly meetings, their terms of office being so arranged that part of the committee goes out of office at each meeting, or in some cases semi-annually or annually, although, as respects this, many societies have no rule. Members of the committee may or may not be eligible to re-election immediately upon the expiration of their terms of office. Sometimes it is provided that a member after having served a certain fixed time must retire for an interval before becoming eligible again. Generally speaking, experience in the duties of the office should count in favor of the retention of a committeeman, and sweeping changes ought to be discountenanced. Of course many things combine to determine the popularity of an officer entrusted with the management of a society in which many persons have a keen interest, and committees cannot expect immunity from the adverse criticism which, however undeserved, sometimes affects this popularity. On the other hand, members who desire the welfare of the society ought to be careful that grievances of a purely personal or petty nature do not blind them to the recognition of what is, on the whole, a faithful and conservative management of its affairs. Helpful criticism is always to be desired, and adds to the efficiency of the committee and promotes the society's interests.

The President of the society is sometimes elected by the members and sometimes by the committee. The Secretary and Treasurer by the latter. Many societies dispense with a treasurer. Members of the committee are usually paid a small fee for attendance at the weekly business meetings.

“It is most desirable, in fixing the scale of payment, to avoid the likelihood of men trying to get on to the committee *simply for the sake of the fees*. This is a danger to be carefully watched in the co-operative movement. The work of its managing men (not its paid officials, to whom it is a profession) should be that of volunteers, who are repaid in moderation for their expense or trouble, and who will withdraw or resign their position at once, without a moment's hesitation, on the score of money, if that is being done of which they so strongly disapprove that they believe this to be the

right course. Otherwise they are not independent, and may tend to get into the hands of men more powerful than themselves, who are well aware that they will not resign if they can possibly help it. From 6d. to 2s. a time for weekly committee meetings, and nothing for sub-committees or adjourned meetings, is a common rule in a moderate sized society." *

The Secretary, and the Treasurer, if there be one, furnish security to the society for the proper performance of their duties, either by deposit or bond, and are usually paid a salary proportioned to the labor devolving upon them.

BUSINESS PREMISES.

The first duties which demand the attention of the committee will be the selection of premises in which to conduct the business of the store and the engagement of a storekeeper. As to premises, conditions of eligibility, rental, etc., will affect their decision. The aim, of course, is to make the store as convenient as possible to the majority of members. If the beginning is to be quite humble the dwelling house of a member may be selected as headquarters, and more extensive, and consequently more expensive quarters taken as business expands and the success of the movement becomes assured.

THE STOREKEEPER.

The storekeeper should be a man of unquestioned integrity and, if possible, not only a believer in co-operation but of some experience in co-operative trading. Now that co-operative stores have multiplied a man possessing the latter qualification is not hard to find if the committee exercises proper care and especially if the aid of the Co-operative Union is sought. It is considered undesirable rather than otherwise that a storekeeper has been trained as a private trader. The average salary of a storekeeper in English towns is about 25s. or 30s. a week besides rooms and gas; in country villages, 18s. to 25s. suffices.

STORE FITTINGS.

The fittings of the store are of the usual sort common to private stores of the same grade. The Wholesale Co-opera-

* Workingmen Co-operators, page 49.

tives provide these if required at a lower rate than they can be bought for elsewhere.

STOCK IN TRADE.

Premises and fittings having been secured and a storekeeper engaged, a stock of goods must be purchased, and here again, as well as in the future purchase of supplies, the judgment of the committee will be put to the test. The maxim that goods well bought are half sold applies to co-operative as well as to ordinary stores. It is also well understood, and so generally practiced as to become the rule, that no adulterated or inferior goods are to be allowed upon co-operative counters. No credit, it will be remembered, is to be given purchasers, and stock in trade is to be bought for cash upon the best terms.

Experience and the growth of the co-operative organization has in these days provided helps for inexperienced committees. The wholesales provide lists of articles such as are proper to provide in starting a store, with quantities and prices of each. The Co-operative Union in this as in other matters of detail is ready to give advice. The co-operative literature affords pamphlets upon the subject of purchases. Thus the path of the unpracticed co-operator is not entirely dark and he is enabled to profit by the wisdom gained by his predecessors in their unaided efforts during the earlier years of the co-operative movement.

A store in the beginning usually confines itself to the staple articles of groceries, and increases the variety of its stock as the demand of its patrons warrants. Thus to ordinary groceries, hardware, tinware, crockery, etc., may first be added. Ready made boots and shoes, dry goods of the staple sorts, clothing, hats, caps, etc., are eventually supplied. As to the latter articles greater care and experience in buying are, of course, demanded, so as to avoid loss by depreciation owing to change of fashion.

In some instances a department for making boots to measure and others for custom tailoring and millinery have been successfully incorporated.

A bakery forms a favorite and generally profitable branch of English co-operative stores. Many fully equipped co-operative bakeries exist as departments of these stores and do a

large business. Butchering, also, has been tried, and with some profit, but, as this requires greater experience and trained judgment on the part of the buyers, and as greater difficulty has been found in procuring efficient department superintendents in this line than in the others mentioned, it has not as yet been found equally successful.

The sale of coal, on the contrary, is common and profitable.

As to the advisability of conducting several departments under one management, the following is to the point, and the statistics give a glimpse at what has been accomplished :

“Speaking generally, ‘make one department a success at a time, keep the accounts of the departments separately, and publish the profits of each department in the balance sheet,’ would be the advice of many co-operators. The number of the chief departments carried on by societies is as follows: 1185 societies do business in groceries and provisions; 772 in drapery; 715 in boots and shoes; 333 in coal; 211 in butchery; 188 in baking; 185 in furnishing; 137 in hardware; 76 in tailoring.” *

In making purchases the normal conditions of supply and demand should be strictly considered and, as a rule, all speculative purchases avoided.

“The amount of stocks should usually not exceed the amount of sales for three or four weeks in groceries; for ten to fourteen days in provisions; for one month in bakery; for three or four days in butchery; for ten to thirteen weeks in drapery, boots and shoes, and furnishing.” †

In sales the ordinary prices of the locality are charged, no attempt being made to undersell private traders. It is not in reduced prices but in division of profits that the purchaser reaps his reward.

THE CHECK SYSTEM.

As dividends are to be declared on purchases arrangements must be made for registering the latter and enabling each customer to prove quickly the amount of his purchases in order to collect his share of profits. This is accomplished quite simply

* Workingmen Co-operators, page 68.

† Ibid, page 43.

by giving each customer a check or token either of metal or paper representing in amount the amount of his purchase. These are retained and presented at the end of the quarter to secure payment of the dividend. Members are from time to time during the quarter required to exchange tokens of small nominal value for those of higher denomination, in order to reduce the number of tokens of small denomination required in circulation and to simplify matters generally.

In the use of these tokens fraud may occur, as, for instance, employés have been known to purloin them and afterward secure their presentation through an accomplice for exchange. On the other hand, purchasers have held them back for presentation during a quarter subsequent to that in which they were issued, and when the dividend happened to be larger, thus unfairly sharing in a larger division of profits than was justly their right, besides disarranging the accounts of the society.

The paper checks may be so made as to guard against the latter evil by changing the color in each quarter, but the paper checks may have their nominal value increased by fraudulent alteration of the amounts borne upon them.

Great care is needed to ensure against corrupt use of the checks, and the ideal check system has yet to be devised.

Various methods are employed to check the operations of the manager and to discover the amount of cash passing through his hands. The system of dividend tokens just described affords a partial check, but, for the reasons stated, fraudulent use of the tokens may render this sort of checking nugatory, and, if relied on, cause a perfectly honest manager to be unjustly suspected. Among other plans one is "giving the customer a ticket, who takes it to a boy, who gives metal checks in exchange and registers each shopman's sales." This is of course applicable to the larger stores only. No absolute check upon the manager's operations has yet been devised. The best safeguard is the watchfulness of the committee. A dishonest manager cannot long retain his place if the duty of the committee is well performed.

DUTIES OF MEMBERS.

The matters of detail to which we have alluded having been attended to, the store is now ready to open its doors for trade.

All, whether members of the society or not, are welcomed, and non-members are permitted to share in the profits, but not to the same extent as members, it being usual to allow them but one-half the regular dividend. It is always desirable to induce non-members to join the society, and sometimes a full dividend is given them, one-half being paid in cash on demand, and the balance credited to a share account in their name, thus in time creating a deposit sufficient in amount to create them full members.

The business of the society, now that the store is in active operation, will depend upon the fidelity with which members patronize it, refusing, as they should, to be drawn away by the insidious solicitations of private tradesmen, who frequently attempt to undermine co-operative stores by cutting prices, offering liberal credit, running special lines of goods at cost prices, and by other devices contrived to lure co-operative customers into their shops.

These attempts are likely to be more effective in the infancy of the co-operative store than later, for the participation in profits soon teaches the thoughtful patron of co-operation that his position as a partner is of more benefit to him in the end than any temporary gain which he may appear for the moment to reap by purchasing at under-rates elsewhere.

But if the store is to be thoroughly prosperous each member must do more than merely give to it his trade. He must take a deep interest in its affairs, must exercise a watchful supervision over its administration, attend the business meetings, participate in the election of officers, carefully study the financial reports, or balance sheets so-called, issued quarterly,* and teach himself to criticise intelligently the policy pursued by the committee who are his servants in immediate control of the enterprise.

At the business meetings all members have equal voting power, so that the society in its organization is thoroughly democratic. Women, too, are usually eligible to membership on the same terms as men, and in some cases have been given places upon committees.

Besides the quarterly business meetings it is usual to hold

* Or semi-annually if dividends are thus declared.

monthly meetings at which it is customary to read the minutes of the meetings held weekly by the committee, and discussion is permitted thereon. Social gatherings of the members are also held annually, or even more frequently, as a means of welding together more firmly the interests of all who are connected with the movement.

STOCK-TAKING AND AUDITING.

Account of stock is to be taken quarterly or half-yearly and profits divided, and this should be carefully and honestly done, with no attempt at over-valuation or desire to increase the dividends beyond the percentage fairly earned. Accurate bookkeeping is essential to the pecuniary welfare of the society, and a "Manual of Bookkeeping," giving full advice upon this head, has been published by the Co-operative Union.

The Union has also published a "Manual of Auditing." Great responsibility rests upon the auditors, who are to make a complete examination of the society's affairs and who are to assure themselves that the balance sheet is correct, and to vouch for it by their signatures. They ought to be men familiar with accounts and, if possible, of some financial experience.

"An inexperienced auditor will do well to act on the following hints. Ascertain that stock has been carefully taken and checked. See that everything is priced at the cost, or a less value, and that all deteriorations of stock have been amply provided for. Count the cash in hand. See that proper vouchers have been received for all payments; and if not sufficiently master of bookkeeping to adopt short systems of check, by comparing the totals of different accounts, check every individual item from its first entry until placed in the balance sheet. Compare the members' pass books with the ledgers. See that the total of the members' accounts agrees with the amount placed in the balance sheet. Ascertain that all goods received and taken into stock are duly paid for, or else taken as a liability, and also that all sums due by the society to merchants and others are taken as liabilities. The best plan is to send a circular note at stock-taking to all persons the society does business with, asking them to advise the auditors what sums are due to them by the society. Examine the committee's minute book, to see that all

expenditure has been duly authorized, and inspect the deeds and other securities of the society.”*

The auditors may be of such number as the society may direct, usually two. Provision is made for the appointment of a public auditor in lieu of auditors elected by the society. No employé of the society is eligible to the office of auditor. Auditors are paid such remuneration as may be voted them at ordinary business meetings.

Any member or person in interest has an individual right of inspection of the accounts of the society under proper regulation, but is not permitted, without special authorization, to inspect the loan or deposit account of any other member without the latter's written consent.

In certain contingencies it is provided that the affairs of the society shall be examined and reported upon by inspectors appointed by the government registrar. The government requires annual returns to be made from every society, containing a general statement of its receipts, expenditures, funds, and effects.

ALLOTMENT OF PROFITS.

The model rules provide for the following allotment of profits: (1) Interest on loans, deposits, and preferred shares, if any; (2) Reduction of the value of fixed stock and plant at such rate as the society may direct (subject to change by the society at the annual rate of ten per cent on fixtures, and of two and one-half per cent on buildings); (3) Reduction of expenses, if any, incurred in forming the society; (4) Dividend on share capital; (5) Reserve fund; (6) Educational fund; (7) Congress fund; (8) Social fund; (9) Dividend on purchases and bonus to employés.

The second item in the foregoing list relates to the amount written off at each stock-taking to allow for the depreciation in value of fixtures and buildings owing to wear and tear. There is a temptation to neglect this as any amount so charged decreases the amount of net profits, and consequently reduces the dividend. But prudent management requires this depreciation to be conscientiously made in order that the assets of the society may not be found over-rated if a financial panic should overtake it.

* Workingmen Co-operators, page 60.

The third item is temporary only and confined to the early years of the society. The fifth item provides for the establishment of a reserve fund, the possession of which adds to the financial stability of the society. Besides the allotment to such a fund of a portion of the profits, usually ten per cent, all fines are carried to it. The fund is applicable by resolution of the society to the equalization of dividends, to meet contingencies affecting the business of the society, or to any other purpose which the general meetings may from time to time direct. The income from the fund is used to increase dividends in the same manner as other income of the society.

The application of a portion of the profits to educational, social, and benevolent purposes, contemplated by the sixth and eighth items, is always considered to be in harmony with the underlying principles of co-operation. Many societies apply two and one-half per cent of the profits to educational purposes, such as technical classes, maintenance of library and reading room, etc. Others neglect the matter altogether, although it is always advised by leading co-operators.

The Congress fund mentioned in the seventh item provides for paying the annual subscription to the Co-operative Union or to any official organ recognized by the Congress.

The practice of allowing employés to share in profits by means of a bonus, provided for in the second clause of the ninth item, would seem to be clearly in accord with co-operative principles, but, although some societies practice it, it is not generally popular. When given it may be said to be awarded on the ground that if employés share in this way they will take a livelier interest in the society's welfare, and thus the bonus will be money well expended in that it will in reality tend to increase profits. Except in theory, the practice does not seem to rest upon the abstract justice involved in the principle of awarding to all who co-operate in producing a given result a share in the benefits obtained. This principle would seem to demand the admission of all employés to an interest in the business, but it appears to be self-interest purely that induces most of the societies that have adopted this plan to pursue it. At present, profit sharing with employés, although nearly always advocated as a matter of theory, is not extensively practiced among co-operative trading societies.

THE BALANCE SHEET.

The balance sheet issued to members forms a complete report of the financial status of the society. Members rely upon it for their knowledge of the society's affairs. It should show clearly, and in as simple a form as possible, so as to be readily understood by the average man, the cash account of the society, giving its cash assets and receipts upon one side, and its liabilities and cash expenditures upon the other. The trade account should also be shown, giving upon the debit side the value of stock at beginning of quarter, amount of subsequent purchases, with expenses and outstanding liabilities, if any, for purchases, and on the credit side the amount of sales liabilities at beginning of quarter, value of stock at end of quarter, etc., the balance of the account showing the net profit. The expense account should be shown in detail, and a concise summary of the capital account should appear, giving the assets and liabilities in detail, followed by a detailed statement of the disposal of profits. The balance sheet ought to be published several days before the general meeting, so as to give members an opportunity to study it and compare it with former issues, that they may be able to criticise it, if need be, and to question it intelligently at the meeting.

SUMMARY OF ESSENTIAL POINTS.

We have now given such a description of a retail distributive society as will, we believe, enable the reader to understand how such a society is formed and carried on. Besides the points we have mentioned the model rules contain provisions for settling by arbitration disputes arising between a member or any interested person and the society or an officer thereof; for expelling any member who may be guilty of conduct detrimental to the society and for the payment to such a member of the sums paid in on shares held by him; and the necessary provisions for conduct of business, transfer of stock, change of name of society, etc.

We now present the following summary of essential points and causes of success and failure, for which we are indebted to the manual entitled "Workingmen Co-operators." We find them nowhere else so succinctly stated.

“Essential Points. (a) The store is open to all; (b) charges ordinary market prices; (c) receives ready money only, and gives no credit; (d) gives dividend in proportion to purchases; (e) every member must have a share or shares, and receives good interest on them; (f) all are equal in voting power, whether they have few or many shares; (g) the store sells genuine articles, which are what they profess to be; (h) the store has an honest manager and an active committee; (i) the society insists on an efficient and intelligent audit and stock-taking.

Causes of Success. (1) A clear understanding and performance of the duties of an officer, an employé, and a member; (2) competent and painstaking officers; (3) competent and trustworthy employés; (4) proper security for the honesty and efficiency of the principal employés; (5) amicable and earnest working together; (6) promptitude and punctuality in business; (7) impartiality, civility, and pleasant manners in the members and in the staff; (8) generous treatment of the employés; (9) judicious purchasing and careful regulation of the stocks; (10) ready money purchases and ready money sales; (11) carefully regulated expenses; (12) judicious investment of all surplus capital; (13) ample depreciation of property; (14) ample reserve funds; (15) good bookkeeping and auditing; (16) officers giving full and free explanations to the members' meetings; (17) members having full confidence in the officers.

Causes of Failure. (1) Allowing the storekeeper to do as he likes; (2) allowing credit to purchasers; (3) bad bookkeeping and auditing; (4) bad rules; (5) carrying repairs and renewals to property account instead of expenses account; (6) competing with all the 'cutting' shops; (7) expenses too great for the business; (8) employment of incompetent persons; (9) dishonesty; (10) injudicious purchasing; (11) injudicious and frequent changes of policy; (12) members purchasing away from the store; (13) not taking ample security from persons in a position to misapply the society's effects; (14) permitting the manager to buy away from the wholesale societies; (15) inefficient officers; (16) members being unreasonable and quarrelsome; (17) purchasing goods on credit; (18) overbuilding; (19) starting branches or new departments before the society is strong enough to bear the burden; (20) waste behind the counter from bad stock keeping or careless weighing.”

THE WHOLESALE STORES.

The success and multiplication of retail stores suggested the propriety of establishing a central purchasing agency or whole-

sale depot. The benefits which it was expected would be derived from such an institution, and which have been largely realized, were, among others, the following :

“Stores will be enabled, through the agency, to purchase more economically than heretofore, by reaching the best markets.

Small stores and new stores are at once put in good position, by being placed directly (through the agency) in the best markets, thus enabling them to sell as cheap as any first-class shopkeeper.

As all stores will have the benefit of the best markets by means of the agency, it follows that dividends paid by stores must be more equal than heretofore, and, by the same means, dividends will be considerably augmented.

Stores, especially large ones, will be able to carry on their businesses with less capital. Large stores will not, as now, be necessitated, in order to reach the minimum prices of the markets, to purchase goods they do not require for the immediate supply of their members.

Stores will be able to command the services of a good buyer, and will thus save a large amount of labor and expense, by one purchaser buying for some 150 stores, while the great amount of blundering in purchasing at the commencement of a co-operative store will be obviated.”*

In our historical review we have mentioned the unsuccessful experiments which preceded the establishment of the English Co-operative Wholesale in 1864. It is not necessary to elaborate these experiments. They failed, partly because the co-operative movement had not become sufficiently strong to sustain such an institution, and partly on account of defective business principles embodied in their administration. The great success of the existing English wholesale and of the Scottish wholesale, established at a later date, is sufficient to commend the plan upon which they are organized to those desiring to found a similar enterprise elsewhere, and we therefore give a detailed description of its features.

In its organization the English wholesale is a federation to which none but co-operative societies are admitted. Such an organization presupposes the existence of retail associations for whose benefit the wholesale society is formed. At first

* Co-operative Annual, 1885; page 70.

each retail society in joining the wholesale subscribed capital in the proportion of one share to each of its members, the value of each share being 5s., the same being transferable, one shilling to be paid up on each share at time of subscription and interest and dividends to remain undrawn until balance of capital subscribed is paid up.

In 1871 the value of shares was changed to £5, and the number of 5s. shares decreased accordingly. Societies were now required to take up one share to each twenty members, and in the following year this provision was changed to one share to ten members.

It was at first proposed to sell goods at cost, with a small commission added to cover expenses. This was soon abandoned as impracticable, and a plan identical with that adopted in the retail stores was substituted, goods being sold at a profit, and all net profits divided among purchasers in proportion to purchases. As in most of the retail stores, non-shareholding purchasers are allowed one-half the dividend given to shareholders.

Business was begun in 1864 at Manchester, where the central offices are now located. The growth of business led to the establishment of main selling branches at Newcastle, in 1871, and at London, in 1874, and sub-branches at Leeds, in 1882, and at Bristol, in 1884.

Buying branches, also, have been established at Tipperary, Killmallock, Limerick, Armagh, Waterford, Tralee, and Cork, in Ireland, for the purchase of Irish butter, an important staple, of which the wholesale society is the largest purchaser. A purchasing branch, which is also a forwarding depot, is maintained at Liverpool, a buying agency for American produce at New York, N. Y., and purchasing agencies at Calais, Rouen, Copenhagen, Hamburg, and a special agency for the purchase of tea and coffee at London.

The society also conducts a shipping business, which owes its origin to its extensive importations of foreign produce, much of which it was desirable to obtain directly from the producers and to secure its careful packing and prompt despatch. Four steamers are now owned by the society, running regularly between Garstow and Rouen, Goole and Calais, and Goole and Hamburg.

The society also sustains a banking department on the usual plan of such institutions. The profits of the banking department are apportioned as follows :

“First. The customer who has a credit balance with the bank will share in the profits on the earnings in proportion to the amount, varying from a quarter to one per cent over the interest the customer would get from the usual terms allowed by the ordinary banker.

Second. The debit customers share in the profit too in a similar way to the credit customer, on the amount of interest which is paid on the debit balances of their account.

Third. A customer may be a credit and debit customer in the same quarter, and would receive profits both as borrower and lender.”*

Besides dealing largely in groceries and provisions the society manufactures biscuits, sweets, dry and soft soap, and boots and shoes; and supplies drapery, hardware, carpets, crockery, fancy goods, and general furnishings. It is the selling agency of several co-operative productive societies manufacturing dry goods, dress goods, ready made and ordered clothing, miscellaneous textiles, furniture, watches, machinery, etc.

Just as the retail stores are administered by a committee chosen by members, so the wholesale, conducting the widely diversified business that we have outlined, is governed by a committee elected by ballot by delegates from the societies composing its membership, each society being entitled to one delegate to every 500 members or fractional part thereof, every delegate having one vote.

The manner of conducting the wholesale business is analogous to that of the retail. The general committee at Manchester has 16 members. The London and Newcastle branches are conducted by branch committees of 8 members each, responsible to the general committee, and in the deliberations of the latter represented by one delegate from each branch. As to stock-taking, which is done quarterly, auditing, etc., the de-

* Co-operative Annual, 1885; page 16.

scription which we have given of the retail stores applies equally to the wholesale. Four auditors are employed who are elected by the shareholders, and paid an annual salary of £40 each, besides the allowance of second class railway fares. Full quarterly balance sheets are published. A strong reserve fund is maintained. The value of the property is written down, or depreciated, at each stock-taking, at the following rates: land, at $2\frac{1}{2}$ per cent; buildings, at 5 per cent; fixed stock, at $7\frac{1}{2}$ per cent; all depreciations being taken upon the original cost. All shares are transferable without charge, and the society has a lien on all shares.

When societies desire to open an account with the wholesale they are required to furnish a copy of their last balance sheet and registered rules. If a balance sheet has not been issued they are directed to state the number of their members, amount of paid-up share capital, whether credit is allowed, and, if so, to what extent, and the amount of business done or probable amount which will be done by them. If not registered at time of application but in process of being so, cash is required with each order. After registration cash must be forwarded with the first order, and on subsequent orders payment must be made within seven days from date of invoice. An application for shares from any society or company must be made by resolution of some general or committee meeting of such society or company, contained in writing and attested by the signatures of the secretary and three members. The number of shares to be taken by each society, as before stated, must be not less than one to every ten members, and this number must be increased annually as the number of members increases. The liability of each shareholding society is limited to the amount of its shares. Share capital receives interest at the rate of five per cent per annum.

The administration of the Scottish wholesale is substantially the same as that of the English wholesale, except that shares therein may only be transferred with the consent of the committee and two-thirds majority of a special meeting of shareholders, and that employes share in dividends in proportion to wages at double the rate per pound that is allowed on members' purchases. Shareholders have one vote each, and one

additional vote to each £500 purchases. Shares are 10s. each, one shilling to be paid in on application. Both the English and Scottish wholesale societies are authorized to carry on any business.

The following statistical statement exhibits the financial relations existing between the retail societies and the English wholesale, by districts, for the year ending December 31, 1883, the latest available : *

DISTRICTS.	Number of Members, December 31, 1883.	TOTAL CAPITAL, DECEMBER 31, 1883.		CAPITAL INVESTED WITH WHOLESALE SOCIETY, DECEMBER 31, 1883.		Total sales during year
		Share.	Loan.	Share.	Loan.	
Manchester, . .	399,108	£ 4,954,067	£ 445,906	£ 138,021	£ 358,531	£ 11,352,437
Newcastle, . .	95,994	700,248	43,850	26,461	51,877	3,359,763
London, . . .	61,891	375,429	49,931	19,385	13,579	1,366,729
Totals, . . .	556,993	6,030,344	539,747	183,867	423,287	16,078,929

DISTRICTS.	PURCHASES FROM WHOLESALE SOCIETY DURING THE YEAR.						Percentage of purchases from Wholesale Society on the total sales.
	Groceries and Provisions.	Drapery.	Woollen Cloth.	Boots and Shoes.	Furniture and Hardware.	Total purchases.	
Manchester, . .	£ 2,445,804	£ 134,076	£ 15,416	£ 81,372	£ 31,851	£ 2,708,519	23.9
Newcastle, . .	860,277	87,773	14,319	52,953	12,747	1,028,069	30.6
London, . . .	323,449	19,025	1,867	18,142	3,608	366,091	26.7
Totals, . . .	3,629,530	240,874	31,602	152,467	48,206	4,102,679	25.5

The inspection of the preceding table develops a curious fact. Although the co-operative wholesale society is a federation composed of the retail associations, its capital being evolved from shares taken up by the latter, yet a comparatively small part of the supplies of the retail stores are purchased by them from the wholesale. The table shows that during 1883 the purchases from the wholesale society were but 25.5 per cent of the total sales made by the retails. That is to say, although

* Co-operative Annual, 1885. See note on page 73, *post*.

the fundamental principle upon which co-operative distribution rests is mutual trade in such manner that profits may be saved and equitably divided among the traders, yet when the associations themselves become buyers they have not adhered to this principle so far as to confine their purchases to the wholesale society founded by themselves for the express purpose of carrying out more completely the fundamental co-operative idea. The English and Scottish wholesales at present supply only about one-third of the goods required by the retail stores.

Undoubtedly a certain percentage of the balance of purchases made by the retails is made from other co-operative sources besides the wholesales, such, for instance, as co-operative corn (flour) mills in their immediate neighborhood, of which there are a number in England, but after this is conceded it must still be true that a large part of their purchases are made from private traders.

The reasons for this apparent neglect of what would seem to be the legitimate source of supply for the retail associations are no doubt various, and do not plainly appear. That the success which has attended the wholesales has abundantly justified their establishment is uncontested, and it must be admitted that the quality of the supplies furnished by them, like that of all supplies distributed upon the co-operative plan, is above criticism. It is, therefore, a little strange that no greater proportion of the wholesale trade of the stores falls into their hands. Especially is it strange, because this trade is altogether controlled by the leading co-operators of the kingdom, in that it rests entirely with the committees of the retail associations, who contend that co-operation rests upon a principle of mutual help as well as mutual pecuniary profit. If these representative bodies are, as may be supposed, imbued with the ideal upon which the movement rests, ought it not to be expected that in practice this ideal would be adhered to more closely?

This disposition to look elsewhere than to the wholesales for the purchase of supplies has, now that a considerable amount of co-operative capital is invested in the latter, in part contributed to an interesting phase of the co-operative movement.

In the first place, the general purpose of the co-operative societies, as stated by an authority fully competent to speak

for them, is "that the business and the work done shall be done not in the interest of, nor in order to enrich, one individual, or a few, but in the interest of the general body of those who are concerned."* Now it is apparent that whenever purchases are made outside the co-operative wholesales a profit which otherwise would be saved is paid to private traders. To this extent, therefore, the general purpose, as above stated, is disregarded.

But other results follow. Capital accumulates with the wholesales to a greater extent than can be used in the ordinary trade proceeding from the retail stores. To discourage the investment of the surplus capital of the latter would discourage the thrift which is one of the best outgrowths of the co-operative system, inasmuch as it would at once turn back upon the retail societies the savings of profits left in their hands as undrawn interest-bearing dividends by their members, and leave them with a surplus which oftentimes could not otherwise be profitably used.

Considerable amounts of capital have thus from time to time accumulated with the English wholesale which might have been made available in distributive trade had the entire wholesale trade of the societies been given to it. This surplus if deposited in bank would, indeed, draw the usual rate of interest on deposits, but would, of course, be loaned by the bankers in the ordinary course of business at a much higher rate. Here again, therefore, a profit would fall into the pockets of individuals which ought to be saved to the co-operative membership, and in this instance, as well as in every case where supplies are purchased outside the wholesales, co-operative capital would be used to benefit competitive trade.

This condition of affairs, soon perceived by those interested in the extension of the co-operative idea, was instrumental in engrafting upon the wholesale society, which until then had attempted nothing beyond co-operative distribution, a system of production. An avenue of investment was needed for the investment of surplus capital, and it was desirable that this capital, if possible, should be directed into co-operative chan-

* Messrs. Ackland and Jones. Workingmen Co-operators, page 9.

nels. Certain staple articles were in constant demand by the retail associations. If such articles were purchased by the wholesale to be re-sold to the retail stores, or if they were purchased by the retail stores directly from the producers, competitive trade was directly benefited. It was also desirable to keep travellers for private firms out of co-operative stores, and as far as possible equip the wholesale store with everything needed by the retails. What more natural, therefore, than that the wholesale society should undertake the manufacture of such articles, using for that purpose the surplus capital accumulating in its hands?

To employ this capital in productive enterprises involved a new departure, which was not undertaken without full discussion. This discussion has not yet entirely ceased. It was held then, and is still held, that the wholesale society should confine itself to distribution and leave production to other organizations. If the wholesale were to engage in manufacturing it would become a powerful and injurious competitor with small and struggling productive societies, whom it ought rather to aid by liberal loans of capital. Finally, both plans were adopted. Large advances were made to productive companies, and experiments were cautiously begun in co-operative manufacturing under the direct management of the wholesale society.

The first productive department opened was the manufactory of biscuits, confections, and soap at Crumpsall, near Manchester. From these works none but registered co-operative societies are supplied. The establishment is equipped with the best machinery; in the baking department flour from co-operative mills is used; and goods free from adulteration are produced.

The Crumpsall works were started in 1873. During the same year a boot and shoe manufactory at Leicester was founded, confined to light goods, and, in 1880, a factory for the production of heavy boots and shoes was put in operation at Heckmondwike in Yorkshire. More than 800 styles of men's, women's, children's, and infants' shoes are produced at Leicester, and both establishments make goods to measure upon special orders. Nothing but genuine goods are made,

and paper or composition as a substitute for leather have never been used.

Since 1874 the society has also carried on the manufacture of soap upon a limited scale at Durham.

The productive departments conducted by the wholesale society have been generally successful, as will appear from the following table showing the average percentage of profit on capital employed for the year ending September 22, 1883, and also from the commencement of each department.*

DEPARTMENTS.	Percentage of profit for year ending September 22, 1883.	Percentage of profit from commence- ment of work.
Crumpsall,	22½	13½
Leicester,	5½	7½
Durham,	3½	3½
Heckmondwike,	5½	loss 1½

“The result is certainly not much to boast of in the shape of direct profits, but it must be remembered that, in addition to the usual difficulties of a new establishment in each case, the private manufacturers who were already selling to the stores had to be displaced, and that this could only be accomplished by goods of sterling quality at low prices; so that if the stores have not received large dividends directly from the wholesale, their members have benefited by the low prices at which sterling quality goods have been supplied to them. And it is not a small thing to be able to say that in a series of years which have resembled a prolonged panic, when individual traders and joint stock companies have been falling into bankruptcy on every side, no failure has occurred in any of the direct adventures of the Wholesale Society.”†

The investments made in outside companies have not been so successful, a loss of £52,057 being reported up to the year 1884 upon loans of this sort.

* Co-operative Annual, 1884.

† Dr. John Watts. Co-operative Annual, 1884.

The shipping enterprises of the wholesale have not returned a direct profit, but the advantages of being brought into close communication with foreign producers, and of being independent of private ship owners, are thought to more than offset the lack of direct financial returns. As a rule, however, as in the productive departments, the investments wholly controlled by the society have proved more profitable than those in which the society had a partial interest only. The vessels owned by the society have many times gained a profit while those chartered for its use from private owners have been sailed at a loss. This is graphically shown by the record of the steamship "Cambrian," on the Goole-Calais and Goole-Hamburg lines, which was sailed 33 voyages on charter at a total loss of over £553, and was then purchased by the society, her subsequent 104 voyages returning a profit of more than £1455. The extension of the shipping business is contemplated and it would not be surprising if further productive enterprises were undertaken. For capital still continues to accumulate faster than trade increases.

"It is plain that if the Co-operative Wholesale is to increase and flourish in the future as it has done in the past, it must find more employment for its capital. In 1864 it turned over its capital twenty-one times in thirty weeks. In 1874 its capital was turned over fifteen times. In 1883 its capital is being turned over at the rate of seven times in the year. If, in the two or three years prior to the panic, its capital had been as fully employed for its own purposes as it was from 1864 to 1870, the companies which depleted it of £58,000 would never have sought advances, or if they had sought would not have obtained them, for the wholesale would have been in a position to say, "No, gentlemen, what you ask is beyond our power." Capital, to be kept safely, must be kept at work. The Wholesale neglects one of the most important duties laid upon it if it ceases to be the depository of the savings of the stores, for then it encourages the consumption of the quarterly dividends and contributes only to the present enjoyment instead of to the permanent welfare of its members. If, however, it receives money it must get leave to employ it, and the modes of employment at present in the power of the Wholesale are few."*

* Dr. John Watts.

From the foregoing it will be seen that whatever difficulties surround the administration of the co-operative stores the lack of capital is not one. As the stores perform the functions of savings banks of deposit a glut of capital becomes itself a difficulty not easily overcome in the absence of avenues of investment at once safe, remunerative, and in harmony with co-operative principles. Although the number of shares which may be held by one person is limited to 200, it is part of the policy of the societies to encourage the investment on the part of members of whatever savings they may be able to make in any way out of their wages as loan capital, and if it could be profitably used the capital of the stores might be indefinitely increased. No question is more frequently discussed than this of making the surplus capital productive.

STATISTICAL ABSTRACT.

The growth and present condition of the co-operative movement may be presented statistically in four tables, which follow.

These tables are based upon the returns made to the registrar, corrected by data in the possession of the Central Co-operative Board. For their compilation in all years, except the last, we are indebted to the Statistical Annual issued by the Co-operative Wholesale Society, Limited. For the year 1883 we have used the abstract of the Registrar's returns contained in the Report of the Central Board to the Congress of 1885. The statistics include a few productive societies, viz: 38 in 1883, and the societies on the civil service supply plan, but the larger part of the societies are distributive societies on the Rochdale plan. A few are distributive societies supplying special articles, such as bread, flour, coal, furniture, coffee, etc. No land or building societies are included.

Of the societies on the civil service plan in the year 1883, two are in England—The Civil Service Supply Association, London, and the Portsmouth Supply Association—, and two in Scotland. These are the only societies on that plan included in the returns. The two English societies had a total membership at the end of the year of 4,916; sales during the year, £1,676,883; stock at the end of the year, £333,139; trade

expenses, £157,746; share capital, £344,875; loan capital, £25,916; net profit for the year, £47,018. The two Scottish societies' membership was 4,948; sales during the year, £161,634; stock at the end of the year, £29,335; trade expenses, £13,404; share capital, £17,137; no loan capital; net profit for the year, £6,744.

With these explanations the tables are presented.

Statistics of Co-operative Societies

YEAR.	NUMBER OF SOCIETIES.			Number of Members.	CAPITAL AT END OF YEAR.	
	Registered in the year.	Not making Returns.	Making Returns.		Share.	Loan.
1862	<i>a</i> 454	68	332	90,341	£428,376	£54,499
1863	51	73	381	111,163	579,902	76,738
1864	146	110	394	129,429	684,182	89,122
1865	101	182	403	124,659	819,367	107,263
1866	163	240	441	144,072	1,046,310	118,023
1867	137	192	577	171,897	1,475,199	136,734
1868	190	93	673	211,781	1,711,643	177,706
1869	65	133	754	229,861	1,816,672	179,054
1870	67	153	748	248,108	2,035,626	197,029
1871	56	235	746	262,188	2,305,951	215,453
1872	141	113	935	330,550	2,969,573	371,531
1873	226	138	983	387,765	3,581,405	496,830
1874	130	232	1,031	412,733	3,905,993	587,342
1875	117	285	1,170	480,076	4,403,547	849,990
1876	82	177	1,167	508,067	5,141,390	919,772
1877	67	246	1,148	529,081	5,445,449	1,073,275
1878	52	121	1,185	560,993	5,647,443	1,145,717
1879	52	146	1,151	572,621	5,755,522	1,496,343
1880	69	100	1,183	604,063	6,232,093	1,341,290
1881	66	-	1,240	643,617	6,940,173	1,483,583
1882	51	108	1,156	655,045	7,298,441	1,464,959
1883	42	151	1,153	680,165	7,467,849	1,524,341

Statistics of Co-operative Societies

1862	<i>a</i> 454	68	332	90,341	£428,376	£54,499
1863	51	73	381	111,163	579,902	76,738
1864	146	110	394	129,429	684,182	89,122
1865	101	182	403	124,659	819,367	107,263
1866	163	240	441	144,072	1,046,310	118,023
1867	137	192	577	171,897	1,475,199	136,734
1868	190	93	673	211,781	1,711,643	177,706
1869	65	133	754	229,861	1,816,672	179,054
1870	67	153	748	248,108	2,035,626	197,029
1871	56	235	746	262,188	2,305,951	215,453
1872	138	104	927	339,986	2,968,758	371,531
1873	225	135	978	387,301	3,579,962	496,740
1874	128	227	1,026	412,252	3,903,608	586,972
1875	116	283	1,163	479,284	4,793,909	844,620
1876	82	170	1,165	507,857	5,140,219	919,762
1877	66	240	1,144	528,576	5,437,959	1,073,265
1878	52	119	1,181	560,703	5,645,883	1,145,707
1879	51	146	1,145	573,084	5,747,907	1,496,143
1880	67	100	1,177	603,541	6,224,271	1,341,190
1881	62	-	1,230	642,783	6,945,284	1,483,583
1882	51	108	1,145	654,053	7,289,559	1,466,959
1883	42	151	1,095	679,294	7,459,139	1,524,241

a The total number registered to December 31, 1862.

b Estimated on the basis of the returns made to the Central Co-operative Board for 1881.

c Includes joint stock companies.

in the United Kingdom — 1862-1883.

Sales.	Net Profit.	Trade Expenses.	Trade Stock.	CAPITAL INVESTED IN —		Profit devoted to Education.	Amount of Reserve Fund.
				Industrial and Provident Societies, and Sources other than Trade.	Joint Stock Companies.		
£2,333,523	£165,562	£127,749	-	-	-	-	-
2,673,778	216,005	167,620	-	-	-	-	-
2,833,606	224,460	163,147	-	-	-	-	-
3,373,847	279,226	181,766	-	-	-	-	-
4,462,676	372,307	219,746	-	-	-	-	-
6,001,153	398,578	255,923	£583,539	c £494,429	-	£3,203	£32,629
7,122,360	424,420	294,451	671,165	137,397	£166,398	3,636	33,109
7,353,363	438,101	280,116	784,847	117,586	178,267	3,814	38,630
8,201,685	535,435	311,910	912,102	126,736	204,876	4,275	52,990
9,463,771	636,399	346,415	1,029,446	145,004	262,594	5,097	66,631
13,012,120	935,715	477,846	1,383,063	318,477	382,846	6,696	93,601
13,633,714	1,110,558	555,540	1,627,402	370,402	449,039	7,107	102,722
16,374,053	1,227,226	593,548	1,781,053	418,301	522,081	7,949	116,829
18,493,991	1,429,090	685,118	2,094,325	667,825	553,454	10,879	241,930
19,921,054	1,743,980	1,279,392	2,664,042	-	-	-	-
21,390,447	1,924,551	1,381,285	2,647,309	-	-	-	-
21,492,219	1,837,660	1,493,842	2,609,729	-	-	-	-
20,332,772	1,857,790	1,536,282	2,857,214	-	-	-	-
23,243,314	b 1,863,599	1,428,303	2,878,832	d 3,429,940	17,407	13,910	-
24,945,033	1,981,109	-	3,051,665	-	-	13,825	-
26,598,295	2,106,958	1,625,170	3,279,374	4,085,871	-	14,730	-
28,089,310	2,318,932	1,727,875	3,194,875	4,388,545	-	15,754	-

in Great Britain — 1862-1883.

£2,333,523	£165,562	£127,749	-	-	-	-	-
2,673,778	216,005	167,620	-	-	-	-	-
2,833,606	224,460	163,147	-	-	-	-	-
3,373,847	279,226	181,766	-	-	-	-	-
4,462,676	372,307	219,746	-	-	-	-	-
6,001,153	398,578	255,923	£583,539	c £494,429	-	£3,203	£32,629
7,122,360	424,420	294,451	671,165	137,397	£166,398	3,636	33,109
7,353,363	438,101	280,116	784,847	117,586	178,267	3,814	38,630
8,201,685	535,435	311,910	912,102	126,736	204,876	4,275	52,990
9,463,771	636,399	346,415	1,029,446	145,004	262,594	5,097	66,631
12,992,345	935,551	477,846	1,383,063	318,477	382,846	6,696	93,601
13,623,553	1,109,795	555,540	1,627,402	370,402	449,039	7,107	102,722
16,358,278	1,227,226	593,548	1,781,053	418,301	522,081	7,949	116,829
18,481,282	1,427,365	685,118	2,094,325	667,825	553,454	10,879	241,930
19,900,699	1,742,501	1,279,392	2,664,042	-	-	-	-
21,374,013	1,922,361	1,381,285	2,647,309	-	-	-	-
21,385,616	1,836,371	1,493,842	2,609,729	-	-	-	-
21,367,692	1,856,398	1,536,282	2,857,214	-	-	-	-
23,231,677	b 1,866,599	1,428,303	2,878,832	d 3,429,935	17,407	13,910	-
24,926,065	1,979,576	-	3,051,665	-	-	13,822	-
26,573,551	2,106,958	1,625,170	3,279,374	4,085,871	-	14,730	-
28,065,809	2,317,150	1,726,487	3,194,875	4,388,545	-	15,754	-

d The return states this sum to be investments other than in trade, which may mean investments in the wholesale societies, corn mills, joint stock companies, building departments, banks, mortgages, loans, etc.

Statistics of Co-operative Societies

YEAR.	NUMBER OF SOCIETIES.			Number of Members.	CAPITAL AT END OF YEAR.	
	Registered in the year.	Not making Returns.	Making Returns.		Share.	Loan.
1862	<i>a</i> 454	68	332	90,341	£428,376	£54,499
1863	51	73	381	111,163	579,902	76,738
1864	146	110	394	129,429	684,182	89,122
1865	101	182	403	124,659	819,367	107,263
1866	163	240	441	144,072	1,046,310	118,023
1867	137	192	577	171,897	1,475,199	136,734
1868	190	93	673	211,781	1,711,643	177,706
1869	65	133	754	229,861	1,816,672	179,054
1870	67	153	748	248,108	2,035,626	197,029
1871	56	235	746	262,188	2,305,951	215,453
1872	113	66	749	301,157	2,786,965	344,509
1873	186	69	790	340,930	3,344,104	431,808
1874	113	177	810	357,821	3,653,582	498,052
1875	98	237	926	420,024	4,470,857	742,073
1876	72	113	937	444,547	4,825,042	774,809
1877	53	186	895	461,066	5,032,958	916,955
1878	48	65	963	490,584	5,204,855	965,499
1879	40	106	937	504,117	5,374,179	1,324,970
1880	53	62	953	526,686	5,806,545	1,124,795
1881	50	-	971	552,353	6,431,553	1,205,145
1882	51	71	900	566,338	6,794,624	1,150,006
1883	42	150	870	576,477	6,871,590	1,165,956

a The total number registered to December 31, 1862.

b Estimated on the basis of the returns made to the Central Co-operative Board for 1881.

c Includes joint stock companies.

Statistics of Co-operative Societies

1872	25	38	178	38,829	£181,793	£27,022
1873	39	66	183	46,371	235,858	64,932
1874	15	50	216	54,431	250,026	58,920
1875	18	46	237	59,260	323,032	102,547
1876	10	57	228	63,310	314,577	144,953
1877	8	54	248	66,910	345,001	156,310
1878	4	54	218	70,119	381,023	180,208
1879	11	<i>a</i> 40	208	68,967	373,728	171,173
1880	14	38	224	76,855	417,726	216,395
1881	12	9	259	90,430	505,731	278,438
1882	-	37	245	87,700	494,735	313,935
1883	-	1	275	102,817	587,549	358,285

a Estimated.

Statistics of Co-operative Societies

1872	3	9	8	564	£1,815	£10
1873	1	3	5	464	1,443	90
1874	2	5	5	481	1,485	370
1875	1	2	7	792	9,638	5,370
1876	-	7	2	210	1,171	10
1877	1	6	4	505	7,490	10
1878	-	2	4	290	1,560	10
1879	1	-	6	537	7,615	200
1880	2	-	6	522	7,822	100
1881	4	-	10	834	2,889	-
1882	-	-	11	1,007	9,082	100
1883	-	-	8	871	8,710	100

in England and Wales — 1862-1883.

Sales.	Net Profit.	Trade Expenses.	Trade Stock.	CAPITAL INVESTED IN —		Profit devoted to Education.	Amount of Reserve Fund.
				Industrial and Provident Societies, and Sources other than Trade.	Joint Stock Companies.		
£2,333,523	£165,562	£127,749	-	-	-	-	-
2,673,778	216,005	167,620	-	-	-	-	-
2,836,606	224,460	163,147	-	-	-	-	-
3,373,847	270,226	181,766	-	-	-	-	-
4,462,676	372,307	219,746	-	-	-	-	-
6,001,153	368,578	255,923	£583,539	c £494,429	-	£3,203	£32,629
7,122,360	424,420	294,451	671,165	137,397	£168,398	3,636	33,109
7,353,363	438,101	280,116	784,847	117,586	178,367	3,814	38,630
8,201,685	553,435	311,910	912,102	126,736	204,876	4,275	52,990
9,463,771	666,399	346,415	1,029,446	145,004	262,594	5,097	66,631
11,397,225	809,237	419,567	1,219,092	300,712	380,043	6,401	79,292
13,651,127	959,493	483,464	1,439,137	337,811	443,724	6,864	83,149
14,295,762	1,072,139	517,445	1,572,264	386,640	510,057	7,486	98,732
16,206,570	1,250,570	598,080	1,852,437	630,400	538,140	10,454	220,011
17,619,247	1,541,384	1,137,053	2,377,380	-	-	-	-
18,697,788	1,680,370	1,222,664	2,310,041	-	-	-	-
18,719,081	1,583,925	1,315,364	2,286,795	-	-	-	-
17,816,037	1,598,156	1,353,832	2,486,704	-	-	-	-
20,129,217	b 1,600,000	1,285,575	2,512,039	d 3,226,370	-	13,262	-
21,276,850	1,657,564	-	2,555,443	-	-	13,314	-
22,539,728	1,784,454	1,442,585	2,813,950	3,729,675	-	14,039	-
23,583,593	1,926,488	1,516,800	2,727,146	4,012,083	-	14,869	-

d The return states this sum to be investments other than in trade, which may mean investments in the wholesale societies, corn mills, joint stock companies, building departments, banks, mortgages, loans, etc.

in Scotland — 1872-1883.

£1,595,120	£126,314	£58,279	£163,971	£17,765	£2,803	£235	£14,809
1,972,426	156,302	67,302	183,265	32,591	5,315	243	19,573
2,062,516	155,087	76,103	208,789	31,661	12,024	463	18,997
2,277,812	176,795	87,038	241,888	31,425	15,314	425	21,919
2,290,452	201,117	142,359	286,662	-	-	-	-
2,676,225	241,991	158,621	337,268	-	-	-	-
2,666,565	252,446	178,478	322,934	-	-	-	-
2,549,565	258,152	182,450	370,510	-	-	-	-
3,102,460	266,839	142,428	366,793	203,565	17,407	648	-
3,649,155	322,012	-	466,222	-	-	508	-
3,733,823	322,504	182,585	462,424	356,196	-	691	-
4,482,306	390,662	209,687	467,729	376,462	-	885	-

in Ireland — 1872-1883.

£19,775	£1,164	£1,284	-	-	-	-	-
16,161	863	774	-	-	-	-	-
15,775	812	907	-	-	-	-	-
15,519	1,725	1,060	£1,350	-	-	-	£67
11,355	1,479	464	-	-	-	-	-
16,434	2,190	676	973	-	-	-	-
16,573	1,289	765	-	-	-	-	15
17,170	1,482	856	-	-	-	£45	71
16,637	1,760	857	1,244	£5	-	-	-
19,058	1,533	1,039	1,668	8	-	3	-
24,744	1,540	1,758	1,812	-	-	-	-
23,501	1,782	1,388	1,585	7,241	-	-	-

The preceding tables show that in the United Kingdom since 1862 the number of societies, including those making and those not making returns, has risen from 400 to 1304, an increase of 226 per cent, while the membership based upon the returns has risen from 90,341 to 680,165, an increase of 652+ per cent. During this time the total sales amount to £303,326,024, and the total net profit to £24,084,113; the latter amount representing capital saved to the members by this mode of trading, it being the sum divided among members since 1862.

It will be seen that considerable amounts have been invested, devoted to educational purposes, etc.

The tables show that the co-operative movement has not made uniform progress in all parts of the Kingdom. England and Wales contain the largest proportion of the societies; Scotland stands next, while in Ireland the movement is yet in its infancy. Beginning with the year 1872 comparisons may be made showing the progress in each division of the United Kingdom, and for this purpose we present the following tables:

Co-operation in England and Wales — 1872-1883.

CLASSIFICATION.	1872	1883	Percentage of Increase.
Societies making returns,	749	870	16.2
Number of members,	301,157	576,477	91.4
Capital, share and loan,	£3,131,474	£8,037,546	156.6
Sales,	11,397,225	23,583,503	106.9
Profits,	809,237	1,926,488	138.0
Devoted to education,	5,097	14,869	191.7

Co-operation in Scotland — 1872-1883.

Societies making returns,	178	275	54.4
Number of members,	38,829	102,817	164.7
Capital, share and loan,	£208,815	£945,834	352.9
Sales,	1,595,120	4,482,306	181.0
Profits,	126,314	390,662	209.2
Devoted to education,	235	885	276.5

Co-operation in Ireland — 1872-1883.

Societies making returns,	8	8	-
Number of members,	564	871	54.4
Capital, share and loan,	£1,825	£8,810	382.7
Sales,	19,775	23,501	18.8
Profits,	1,164	1,782	53.0
Devoted to education,	-	-	-

These tables show in England and Wales, from 1872 to 1883, an increase of 16.2 per cent in number of societies and 91.4 per cent in membership. Capital increased 156.6 per cent; sales 106.9 per cent, and profits 138.0 per cent. The rate of progress in Scotland, it appears, is greater than that in England and Wales, the increase in societies in that country being 54.4 per cent; in membership 164.7 per cent; in capital, 352.9 per cent; in sales, 181.0 per cent; and in profits 209.2 per cent. The progress in Ireland is comparatively slight.

It has been estimated that the membership of the societies must be quadrupled if we would arrive at the total population connected with the movement. This would give a total of 2,720,660 for the year 1883. In the northwest of England, especially, the movement has great strength, and it has been stated that in this section at least one-fourth of the population in the larger towns procure their supplies from co-operative stores, and that this is true also of the entire counties of Durham and Northumberland.

It is interesting to note that the average amount of sales to each member, which in 1862 was £25.83, has in 1883 become £41.31. The ratio of expenses to members has considerably increased also, the average in 1862 being £1.41 to each member, and in 1883, £2.54. The average net profit to each member has nearly doubled, it being £1.83 in 1862 and £3.41 in 1883. The percentage of net profit upon share and loan capital was 34.2+ in 1862, and 25.7+ in 1883.

The following table, showing the sales of all general distributive societies on the Rochdale plan which during the years 1866 to 1883 exceeded £200,000 a year, exhibits the progress of the larger stores and the strength of the movement in various localities:

Co-operative Societies with Sales

	NAMES OF SOCIETIES.	COUNTIES.	1866	1867
			£	£
1	Rochdale Equitable Pioneers, . . .	Lancashire,	249,122	283,942
2	Co-operative Wholesale Society, . .	Lancashire,	-	331,744
3	Halifax Industrial,	Yorkshire,	-	-
4	Leeds Industrial and Corn Mill, . .	Yorkshire,	-	-
5	Oldham Industrial,	Lancashire,	-	-
6	Bury District,	Lancashire,	-	-
	Totals, . . . .	. . . .	249,122	615,686

	NAMES OF SOCIETIES.	COUNTIES.	1875	1876
			£	£
1	Rochdale Equitable Pioneers, . . .	Lancashire,	305,657	305,191
2	Co-operative Wholesale Society, . .	Lancashire,	2,247,395	2,697,366
3	Halifax Industrial,	Yorkshire,	270,499	237,754
4	Leeds Industrial and Corn Mill, . .	Yorkshire,	390,645	365,639
5	Oldham Industrial,	Lancashire,	253,438	284,977
6	Bury District,	Lancashire,	212,814	231,692
7	Manchester Equitable,	Lancashire,	-	-
8	Belton,	Lancashire,	-	-
9	Gateshead,	Durham,	-	-
10	Barnsley British,	Yorkshire,	-	-
11	Oldham Equitable,	Lancashire,	-	-
12	Huddersfield,	Yorkshire,	-	-
13	Newcastle-upon-Tyne,	Northumberland, . .	-	-
	Totals, . . . .	. . . .	3,680,448	4,122,619

There were also in the year 1883 twenty-two general distributive societies on the Rochdale plan whose sales were over £100,000 and under £200,000. Five of these were in Lancashire, six in Yorkshire, five in Durham, and one each in the counties of Northumberland, Cumberland, Chester, Leicester, Devon, and Derbyshire.

exceeding £200,000 yearly.

1868	1869	1870	1871	1872	1873	1874	
£	£	£	£	£	£	£	
290,540	236,439	222,138	246,674	267,572	287,212	298,889	1
412,240	507,217	677,734	758,764	1,153,132	1,636,950	1,964,829	2
-	-	-	-	235,730	264,137	273,186	3
-	-	-	-	-	312,308	350,536	4
-	-	-	-	-	213,600	237,845	5
-	-	-	-	-	209,382	223,622	6
702,780	743,656	899,872	1,005,438	1,656,434	2,923,589	3,384,907	

1877	1878	1879	1880	1881	1882	1883	
£	£	£	£	£	£	£	
311,715	299,039	270,070	283,655	272,141	274,627	276,457	1
2,827,052	2,705,025	2,645,331	3,339,681	3,574,095	4,038,238	4,546,891	2
237,447	209,571	-	207,539	-	-	206,058	3
374,166	358,865	360,017	412,225	432,811	438,478	486,784	4
316,903	279,999	261,813	303,012	310,387	320,336	335,672	5
251,057	241,886	217,282	231,918	225,689	240,227	250,123	6
-	-	208,513	242,966	242,535	254,124	258,935	7
-	-	-	-	219,657	254,414	295,437	8
-	-	-	-	200,261	225,202	248,364	9
-	-	-	-	-	215,421	253,512	10
-	-	-	-	-	210,581	235,678	11
-	-	-	-	-	201,718	208,710	12
-	-	-	-	-	-	239,877	13
4,318,340	4,094,985	3,963,026	5,020,996	5,477,576	6,673,366	7,842,498	

We now present statistics showing the progress and present condition of the great English Wholesale Society.* The following table exhibits its progress from its commencement in March, 1864, to June, 1885 :

* Corporate name, Co-operative Wholesale Society, Limited.

Progress of the English Wholesale Society

YEAR ENDING —	Departments and Branches added.	£5 shares taken up.	No. of mem- bers be- longing to share- holders.	CAPITAL.		
				Shares.	Loans and De- posits.	Trade and Bank Reserve Fund.
October, 1864 (30 weeks)	- -	-	18,337	£ 2,455	Included in shares.	£ -
October, 1865 . . .	- -	-	24,005	7,182		-
October, 1866 . . .	Tipperary.	-	31,030	10,968		82
January, 1868 (65 weeks)	- -	-	59,349	11,276	14,355	682
January, 1869 . . .	Kilmallock.	-	74,737	14,888	16,059	1,115
January, 1870 . . .	Limerick.	-	79,245	16,556	22,822	1,280
January, 1871 (53 weeks)	- -	-	89,880	19,015	22,323	2,826
January, 1872 . . .	Newcastle.	5,835	114,588	24,410	25,768	1,910
January, 1873 . . .	Manchester boot and shoe; Crumpsall.	6,949	134,276	31,352	112,589	2,916
January, 1874 . . .	Armagh; Manchester drapery; Leicester; Cheshire; Waterford; Clonmel.	13,899	168,985	48,126	147,949	1,613
January, 1875 . . .	London; Tralee; Dur- ham.	17,326	198,608	60,930	193,594	5,373
January, 1876 . . .	Liverpool.	22,254	249,516	78,249	286,614	8,910
January, 1877 (53 weeks)	New York; Goole furnishing; S. S. "Plover" purchas- ed; Cork.	24,717	276,522	94,590	299,287	12,631
January, 1878 . . .	- -	24,979	274,649	103,091	287,536	14,554
January, 1879 . . .	- -	28,206	305,161	117,657	291,939	16,245
December, 1879 (50 weeks)	Launch of S. S. "Pio- neer;" Rouen; Goole forwarding depot.	30,688	331,625	130,615	321,670	25,240
December, 1880 . . .	Heckmondwike.	33,663	361,523	146,061	361,805	38,422
December, 1881 . . .	Copenhagen; Pur- chase of S. S. "Cam- brian."	34,351	367,973	156,052	386,824	16,037
December, 1882 . . .	Tea and coffee depart- ment, London.	38,643	404,006	171,940	416,832	20,757
December, 1883 . . .	Purchase of S. S. "Marianne Briggs."	41,783	433,151	186,692	455,879	20,447
December, 1884 (53 weeks)	Hamburg; Bristol; S. S. "Progress."	45,099	459,734	207,080	494,840	25,126
June, 1885 (26 weeks)	- -	49,393	491,000	225,822	510,529	28,268

* See note on page 73, *post*.

from March, 1864, to June, 1885.*

CAPITAL. — Con.			Net Sales.	COMPARISON WITH PREVIOUS YEAR.		DISTRIBUTIVE EXPENSES.		Net Profit.	Aver- age divi- dend paid per £.	Trans- ferred to Reserve and Insur- ance Funds.
Insur- ance Fund.	Reserv- ed Ex- penses.	Total.		Increase.	Per- centage.	Amount.	Rate per £ on Sales.			
£	£	£	£	£	-	£	1¼	£	d.	£
-	-	2,455	51,857	-	-	347	1¼	267	1½	-
-	-	7,182	120,754	-	-	906	1¼	1,853	3½	-
-	-	11,050	175,489	54,735	45¼	1,615	2½	2,310	3	234
-	-	26,313	331,744	112,688	51¾	3,135	2¼	4,411	3	450
-	-	32,062	412,240	124,063	43	3,338	17s	4,862	2¾	416
-	-	40,658	507,217	94,977	23	4,644	2½	4,248	1¾	542
-	-	44,164	677,734	159,379	30¾	5,583	17s	7,626	2¼	1,620
-	-	52,088	758,764	86,559	127s	6,853	2½	7,867	2¼	1,036
-	-	146,557	1,153,132	394,368	517s	12,811	2½	11,116	2¼	3,243
2,356	-	200,044	1,636,950	483,818	417s	21,147	3	14,233	2	922
3,385	-	263,282	1,964,829	327,879	20	28,436	3¾	20,684	2	5,461
5,834	-	379,607	2,247,395	282,566	14¾	31,555	3¾	26,750	2¾	7,826
10,843	634	417,985	2,697,366	401,095	17½	42,436	3¾	36,979	2¾	4,925
12,556	788	418,525	2,827,052	188,897	7½	43,160	3¾	29,189	2	579
15,127	1,146	442,114	2,705,625	†121,427	†4¾	43,093	3¾	34,959	2½	5,970
15,710	1,095	494,330	2,645,331	22,774	07s	41,300	3¾	42,764	2¾	8,060
17,905	1,661	565,854	3,339,681	611,282	22¾	47,153	3¾	42,090	2¾	10,651
18,644	2,489	580,046	3,574,095	234,414	7	51,306	3¾	46,850	2½	7,672
19,729	2,945	632,203	4,038,238	464,143	127s	57,340	3¾	49,658	2½	3,416
21,949	6,214	691,181	4,546,889	508,651	12½	66,057	3¾	47,885	2½	3,176
24,324	9,988	761,358	4,675,371	41,042	07s	70,343	3½	54,491	2¾	6,431
27,310	6,496	798,425	2,242,242	131,116	6½	36,846	3¾	38,787	3¾	7,527

† Decrease.

The total amount of sales shown in the foregoing table is £43,329,995, while the expenses reach the total of £619,422, the rate of expenses per £ on total sales being $3\frac{3}{8}$ per cent. The net profits amount to £529,884, affording an average dividend per £ of $2\frac{1}{2}d$. The total amount transferred to the reserve and insurance funds is £80,157. The figures show conclusively the financial prosperity of this society and indicate so far as can be done by aggregates the volume of business transacted. In certain staples the trade is very large. For instance, the shipments of Irish butter for the year ending June, 1885, amounted to 116,168 firkins, the total weight of this article sold in the single quarter ending June 27, 1885, being 15,577 cwts.; and besides this 31,977 cwts. of other foreign butter was disposed of.

The value of tea sold for the year ending June, 1885, was £249,228; and of coffee, £36,457.

The business of the society is still increasing. Comparing the quarter ending June 27, 1885, with the corresponding period in the previous year, and the net value of goods increased $5\frac{3}{8}$ per cent; the total capital—shares, loans, deposits, reserves, and insurance,— $9\frac{1}{2}$ per cent; the number of members belonging to the shareholding societies, 10 per cent; the number of societies holding shares, $5\frac{3}{8}$ per cent; and the number of societies supplied with goods, $5\frac{3}{8}$ per cent. On the 27th of June, 1885, the nominal value of land held by the society was about £83,624; of buildings, £109,692, and of steamships, £30,070.

In October, 1884, the total number of employés in the service of the society was 1,570, of whom about one-half, or 771, were engaged in the Leicester shoe works. One hundred and thirty-two were employed in the shoe works at Heckmondwike; 258 in the Manchester departments; 106 at Newcastle, and the others at the various branches and upon the steamships.

When we remember that this institution rests entirely upon capital invested by workingmen, and largely upon capital saved through co-operative trade, these statistics afford conclusive evidence of the soundness of the principles upon which co-operative distribution rests, and of the clear business insight

possessed by those who have controlled the affairs of the society.

Although the Scottish Wholesale Society is a much smaller institution, its record is also highly successful. We close our statistical abstract with a table showing its growth to the close of the year 1883 :

Progress of the Scottish Wholesale Society.

YEARS.	Members in Shareholding Societies.	Share and Loan Capital.	Reserve Funds.	Sales.	INCREASE OF SALES OVER CORRESPOND- ING PERIOD OF PRE- VIOUS YEAR.	
					Amount.	Per- centage.
		£	£	£	£	
1869	-	4,246	90	64,484	-	-
1870	-	11,221	398	104,929	40,445	62
1871	-	16,177	932	135,872	30,943	29
1872	16,723	25,820	1,429	228,074	92,202	67
1873	20,496	46,862	1,792	361,856	133,782	58
1874	24,496	43,251	2,199	417,586	55,730	15
1875	27,029	54,383	2,375	412,010	*5,576	*1
1876	28,999	63,386	2,675	440,757	28,747	6
1877	30,538	68,117	3,217	554,890	114,133	25
1878	33,934	80,028	3,357	603,906	49,016	8
1879	35,768	85,554	3,983	611,626	7,720	1
1880	40,798	101,335	7,727	789,506	177,880	29
1881	48,097	122,864	10,407	937,828	148,322	18
1882	52,610	153,575	11,370	1,080,658	142,830	15
1883	57,252	174,413	13,678	1,202,998	122,340	11

* Decrease.

THE CO-OPERATIVE UNION.

The co-operative societies are bound together by the organization of the Co-operative Union. This organization affords moral support to the societies, and through its executive, the Central Co-operative Board, is an effective agency in promoting their welfare, and an invaluable aid in disseminating information respecting the movement and in promoting the extension of co-operative work.

By its constitution the Union declares its purpose to be "the promotion of the practice of truthfulness, justice, and economy in production and exchange." It proposes to effect this purpose :

"(1) By the abolition of false dealing, either — *a. Direct*, by representing any article produced or sold to be other than what it is known to the producer or vendor to be; or, *b. Indirect*, by con-

cealing from the purchaser any fact known to the vendor material to be known by the purchaser, to enable him to judge of the value of the article purchased.

(2) By conciliating the conflicting interests of the capitalist, the worker, and the purchaser, through an equitable division among them of the fund commonly known as *profit*.

(3) By preventing the waste of labor now caused by unregulated competition."

This platform is broad and far reaching in its scope. It not only comprehends all that has yet been accomplished by the co-operative societies, but includes all that the ardent co-operator hopes to see realized in the future. It seeks a division of profit not only among consumers, but among capitalists and workers also, and aims, as co-operative advocates generally do, at restricting competition.

The Union is open to all industrial and provident societies, friendly or building societies, trade unions or associations, joint stock companies or industrial partnerships, provided always that such societies or associations accept the statement of principles enunciated by the Union and agree to be guided by them in business transactions, and agree :

"To contribute to the Congress fund an annual subscription, at the rate of 2*d.* for each member, or, in the case of industrial partnerships, each employé, up to 500. Contributions on any larger number of members give the controlling body, for each additional 500 members, or fraction, for whom it pays at the rate above mentioned, the right to send an additional delegate to the annual Congress, by which the Union is governed."

The Central Board, as the executive of the Union, is prepared to give legal and general advice to the societies in matters affecting their interests. It is also a statistical bureau collecting and collating information for their benefit, and, lastly, it is a propagandist agency aiming to disseminate co-operative principles especially in the United Kingdom but generally throughout the world.

In the co-operative organization the societies are grouped in sections, of which there are six, viz: Midland, Northern, North-Western, Scottish, Southern, and Western. Each of

these sections contains approximately the following number of societies :

Midland, 196 ; Northern, 138 ; North-Western, 437 ; Scottish, 295 ; Southern, 152 ; and Western, 66. These returns include 36 productive societies, exclusive of the productive departments of the wholesale society. The societies in Ireland are attached to the North-Western section. The sections, with the exception of the Western, are each sub-divided into conference districts, the number of such districts in each section being as follows : Midland, 9 ; Northern, 7 ; North-Western, 15 ; Scottish, 10 ; and Southern, 9.

Besides the general Congress of the Union, held annually, and composed of delegates from the societies in fellowship, local conferences are held in the various conference districts for the discussion of subjects in interest.

The affairs of each section are managed by local councils annually elected by ballot by the societies in the sections respectively. These councils have the following number of members : Midland, 9 ; Northern, 7 ; North-Western, 11 ; Scottish, 10 ; Southern, 9 ; and Western, 7. These councils united constitute the Central Board.

The executive committee of the Central Board is termed the United Board, and consists of two representatives from each local council, except the North-Western, which has three, and the Western, which has one.

The Central Board in its entirety meets twice each year, once just prior to the assembling of the Congress and once immediately after the appointment of a new Board. The United Board meets three times each year, at Manchester. The executive of the United Board is termed an office committee, and its members are appointed from the general body by the Central Board at its first meeting in the year. Attached to the United Board is a paid staff comprising a secretary, assistant secretary, bookkeeper, and clerks.

The members of the several Boards and councils are paid travelling and other necessary expenses incurred in the performance of their duties.

The conference districts of the sections are variously organized ; some have a chairman, secretary, and committee ; others

have in addition a statistical secretary ; others have a secretary only, while a few have no officers.

At the Congresses reports are presented upon the condition of the societies in the various sections, papers are read upon co-operative subjects, and the usual discussions ensue. The Congresses are opened by an inaugural address by some person of eminence, and it is customary to listen to a sermon from some noted divine. The rules of the Congress provide for meetings upon two days only, but it is now usual to prolong the sessions to three days.

Among others, the following subjects have been discussed : The law relating to co-operation ; associated homes ; co-operative banking ; methods of voting and auditing in co-operative societies, and the best methods of managing such societies ; co-operative cottage building ; education in connection with co-operation ; credit ; land and agriculture ; bonus or profit sharing ; prospects of co-operation ; policy of high dividends ; propagation and organization in the co-operative movement ; surplus capital ; trade unions ; transferable or withdrawable shares ; workingmen's clubs ; co-operative journalism ; co-operative production ; a labor exchange ; industrial partnerships, and wholesale distribution.

Addresses have been delivered by Thomas Hughes, Q. C. M.P., W. Morrison, M.P., Hon. Auberon Herbert, M.P., Joseph Cowen, M.P., Sir Thomas Brassey, M.P., Prof. Thorold Rogers, M.P., Prof. Hodgson, The Marquis of Ripon, Prof. Stuart, The Lord Bishop of Durham, The Earl of Derby, Lord Reay, Right Hon. W. Baxter, M.P., Sedley Taylor, Esq., and Mr. Lloyd Jones.

The statistics of the Union are presented in the following table : *

* Co-operative Annual, 1885.

YEARS.	Subscribing Societies.	No. of members.	Subscriptions and Donations.	Places where Congress met.	Societies represented.	No. of delegates.
			£ s. d.			
1869 . .	55	-	117 13 9	London,	57	62
1870 . .	-	-	-	Manchester,	21	96
1871 . .	183	86,139	220 11 10	Birmingham,	30	75
1872 . .	202	-	396 7 1	Bolton,	55	130
1873 . .	253	-	922 8 8	Newcastle-on-Tyne,	92	194
1874 . .	357	197,476	1,375 6 11	Halifax,	94	189
1875 . .	352	219,150	1,495 10 5	London,	71	114
1876 . .	397	219,748	1,556 3 8	Glasgow,	93	116
1877 . .	430	249,228	1,764 2 8	Leicester,	109	170
1878 . .	450	246,214	1,939 0 3	Manchester,	164	280
1879 . .	469	270,665	1,980 13 7	Gloucester,	85	130
1880 . .	510	293,949	2,190 5 3	Newcastle-on-Tyne,	113	199
1881 . .	494	290,623	2,120 10 9	Leeds,	154	275
1882 . .	496	330,474	2,415 13 4	Oxford,	141	217
1883 . .	553	343,923	2,660 9 2	Edinburgh,	246	397
1884 . .	606	518,971	3,043 9 2	Derby,	243	425
1885 . .	631	554,156	3,356 5 3	Oldham,	255	578

The proceedings of the Congresses are annually published. The Central Board, in the exercise of its function as a propagandist agency, also publishes and circulates, either by gift or sale, many pamphlets and documents upon co-operative subjects.

The Central Board has performed much work of a purely utilitarian nature, relating to the pecuniary and legal interests of the societies. Its labors of this kind may be understood from the following :

“The appointment of the present General Secretary* has, since 1873, secured to the members of the Union legal advice free of charge ; the publication in the same year of the model rules for land, building, and mortgages, prepared by the present Chief Registrar ; followed, in 1874, by the general rules for industrial and provident societies, which have since been twice revised, and subsequently by the manuals on bookkeeping, on auditing, and on the system of checks ; the various Acts relating to industrial and provident societies passed before 1876 ; the consolidation of these Acts, with many important amendments, in 1876 ; the extension of the power of nomination, by the provident nominations and small intestacies Act, up to the limit of £100 ; the explanations and forms relating to these nominations ; the indexes and other documents of a general character, prepared and issued by the Central Office for the use of societies ; — are all instances of this action. Not less important has been the watchfulness of the central body against any attacks aimed

* Edward V. Neale, Esq.

at co-operation by its commercial opponents — of which the energetic action taken to prevent the interference with the liberty of the Civil Servants of the Crown in the disposal of their own time, threatened in 1881, is a startling instance.” *

The extension of co-operation is further assisted by the work of the Southern Guild of Co-operators, 31 Southampton Street, Strand, London, W. C., which exerts itself in the formation of new societies and in the education of the public in co-operative principles by means of public meetings.

The attentive reader of this report must perceive that so-called co-operative distribution, upon the plan formulated by the Rochdale Pioneers, and as at present followed in the United Kingdom, having for its unit the retail store; possessing the advantage of strong and energetic wholesale societies, composed of and supported by the stores, and fostered by a Central Board and Annual Congresses, has been in the highest degree successful in what it has undertaken.

The organization, considered as a whole, is admirable, adapted to hold together the members; and to advance their common interests. Its success might have been predicted, for the whole movement rests upon approved and well recognized business principles. There seems to be no reason why similar enterprises might not be equally successful elsewhere if the same plan is followed.

Every store before it opens has its support assured in the trade of its members. If honest men are selected as officers; common prudence observed in the conduct of business; reasonable care exercised in the purchase of stock in trade, and the cash system strictly adhered to, failure should be impossible.

The business may expand as membership increases, and expenses may at all times be kept well in hand.

Of course, in the United States, the isolated store must miss the valuable help which the English stores have in the organization that has grown up as the movement in that

* This relates to an attempt on the part of certain private traders to prevent government employes assisting in the management of co-operative stores. Aimed ostensibly at the London supply associations, it would, if successful, have affected the operation of certain workmen's associations elsewhere. It was defeated by the prompt action of the Co-operative Union.

country has gained strength ; but, if stores were to multiply in America the same organization would follow here, and, meantime, the recorded experience of English effort, if availed of among us, would prevent serious errors in the conduct of business.

It becomes proper then to review just what this movement has accomplished, and what, if anything, it has failed to achieve ; and in entering upon this inquiry we desire to be perfectly fair, while at the same time presenting the actual facts. For, in justice to those who in this country are interested in co-operative effort, and may seek to establish such stores here, it is well clearly to point out its limitations as well as its possibilities, in order that no more may be expected than is likely to be realized.

In the first place, how far is this movement co-operative ? The answer must be only so far as it rests upon the participation of all customers in the profits they produce by their trade. This is the sole co-operative feature. We speak broadly, and disregard for the moment the limited number of societies which have gone one step farther and allowed a share in profits to employés.

The division of profits upon the basis of purchases, and the restricting of stockholders to a fixed rate of interest on their capital stock, entitle these stores to the name co-operative, in distinction from the Civil Service distributive societies and other joint stock companies in which profits are divided upon the basis of stock. In the latter only stockholders gain from increase of trade. In co-operative stores all customers gain, and the store is open to all who come. The stockholder receives only his stipulated interest, that being the remuneration to which, as a capitalist, he is entitled. All who assist in making the profit share in its division. The principle is modified in its operation but not disregarded by the plan of allowing members to share at double the rate of non-members ; for no limitation exists as to membership, and non-members may by a small payment become members at any time, and begin at once to share at the members' rate.

The stores are justly open to the criticism that while calling themselves co-operative, they are, except in the feature we have mentioned, not really so. Perhaps, considering the sense in

which the term co-operation is used in economic discussion, and the persistency and good faith with which it is urged by many as a remedy for industrial evils, the name "Consumers' Societies" would be more appropriate. For it is no detraction from the solid benefits these societies have reaped to admit that as yet they have done little to solve the vexed questions affecting labor and capital, or to advance co-operative principles as they are generally understood.

This mode of distribution is organized, economized, and made effective for consumers almost entirely, and producers, as such, are not materially benefited. The societies as purchasers keenly appreciate and follow the rule adopted by the private trader, buying at the lowest possible competition prices, and in their transactions with producers making use of the same expedients as those employed in private trade to drive good bargains, and thus swell profits for the benefit of their customers.

The maxim that "goods well bought are half sold" is kept constantly in view, and the importance of keen and shrewd buying is so well understood that employés possessing the requisite ability in this direction are highly prized and liberally paid. To the producer, therefore, this system of distribution offers no special advantages.

How does it affect the wage worker? The English wholesale conducts with co-operative capital a considerable manufacturing business, and production under the management of the societies is likely to increase. Supposing it to increase under the policy already pursued, what benefit would accrue to the employés other than those obtained from private employers? None. Exactly the same principles appear to govern the co-operative and the individual employer. The Co-operative Wholesale pays competition wages and manufactures its goods at the lowest possible labor cost. Its workmen have no share in profits.* Its object is to divide the largest possible profits among its customers. Its mode of operation is identical with that of the private employer.

This has, indeed, provoked criticism. Says one observer :

* The Scottish Wholesale escapes this criticism. Its employés, as previously noted, share in dividends.

“The Co-operative Wholesale Society is a gigantic middleman; in its workshops it pays the lowest of competition wages; in the language of one of the workers in one of the shoe factories, ‘the workmen have to work for what they can get, they know there is no true co-operation.’ In its transactions with other producers it pays the lowest of competition prices; the profits made out of the retail prices are distributed amongst the members, labor is depressed. In short, it is as far from displaying a single feature of real co-operation as any private trader is who uses the weapons of competition and capitalism for his personal ends, regardless of the interests of others.

“The Co-operative Labor Association, whose principal object is to recognize the combined interests of capital and labor in productive enterprise, is largely composed of members of the co-operative movement. In a conference just held, a resolution was passed asking ‘the committee of the Labor Association to point out in a *fraternal* spirit to the Wholesale Co-operative Society the grave injury they are doing to the cause of co-operation by their failure to carry out co-operative principles in their productive works, and to offer their services in placing the wholesale workshops upon a true co-operative basis.’ ”*

So far then as relates to removing the evils which it is alleged spring from competition, these societies have not yet conspicuously succeeded. This does not indicate failure, for it does not appear that in practice much has been attempted in this direction. Probably any other course than that pursued would have diminished the profits which have been divided among the members. It is shrewd business management that has helped to amass these profits, and if the societies be judged solely by their success in what they have attempted no fault can be found.

It is only when this success is used to attest the efficacy of co-operative theories, that the impartial critic must dissent. As a rule, the co-operative societies have contented themselves with financial success, leaving to the future the extension and application of the theories, which, up to this time, although seeming to disregard in practice, they have never ceased to discuss and advocate.

Whatever hope and future promise may rest in co-operation

* “Distribution Reform,” by Thos. Illingworth, pages 90-91. Cassell & Co., Publishers.

it is not as a scheme for removing all the evils which many feel to be inherent in the present industrial organization that this plan of co-operative distribution is to be recommended. It may be a help, however. As a method of capital-saving it affords the groundwork of a system of co-operative production, which might be made safe and remunerative so far as the market for product could be assured by the demands of the stores themselves. Such an assured market would materially relieve the co-operative producers from the struggle which must always be before them in any effort to secure a market in competition with private manufacturers. Taken for what it is, it has been of great benefit to the working classes in Great Britain, and under similar social conditions might be equally beneficial elsewhere.

It has brought to 680,165 members, £24,084,113 in profits, and, incidentally, it has produced other results which no statistics can adequately portray, results moral rather than material. It has stimulated thrift, taught self-reliance, encouraged the ownership of property, prevented debt by making cash payments obligatory, and placed in the hands of its patrons goods practically free from adulteration. In the English manufacturing towns it has promoted the social spirit by bringing members together in reunions and in educational work. And despite all criticism which may be made upon the slowness of these societies to advance farther upon the co-operative line, it must be conceded that there is much truth in the following from the pen of the able Secretary of the Central Board :

“The supporters of such a store have, as they ought to have, ample reasons for supporting it in their own interest. And those who join these institutions when they are successful too often have no other motive than the notion of personal advantage. Still the feeling that the store is an institution essentially unselfish, excluding no one from its benefits, founded for the common good of all who can be induced to take part in it*—this feeling, derived from the noble spirit of the original founders of these stores, has given a characteristic tone both to their own action and to the public appreciation of them. Their educational funds, their social parties, the attendance at public meetings connected with them, the absence of

* In contradistinction to the joint stock companies, where the stock is limited.

a disposition to ridicule their rejoicings at the founding of a new store, are proofs of this. There is a general perception that the co-operative society has in view an end beyond the private interest of those who set it up, which gives to these trading establishments a sort of consecration, even in the eyes of those who do not belong to them."*

Much of what has been done abroad through these societies is done in Massachusetts by the savings bank, the evening school, the public library, free lectures, and other institutions common here, and growing out of our conception of a free State and republican institutions. Much of the need for these stores is also met in our larger towns by enterprising private concerns who put before the public the best goods at low cash prices. But still there is no doubt that in many towns the same financial benefits might accrue to any society formed and conducted on the Rochdale plan, the work being modified in some respects to meet local requirements, and to conform to the needs of American communities.† The experiment is one easily tried, not involving loss if carefully managed, and the results, if successful, well worth the effort.

NOTE. It may be noticed that the statistics showing the condition of the English wholesale society, December, 1883, contained in the table on pages 60 and 61, differ somewhat from those contained in the table upon page 44. The excess of the totals in the table on page 44 over those in the table on pages 60 and 61 is to be explained from the fact that the table upon page 44 relates to relations existing between the wholesale and all purchasing co-operative societies, many of which are not shareholders, while the table upon pages 60 and 61 relates to the accounts between the wholesale and its shareholding societies. Differences in the classification of certain loans and deposits create differences in the capital account totals, and the excess of sales shown in the table, pages 60 and 61, over the amount returned as purchased from the wholesale by co-operative societies in the table, page 44, is caused by the fact that the larger amount includes sales to other than co-operative societies of goods which in the course of trade the wholesale is obliged to buy, but cannot dispose of to its own customers, and is therefore obliged to sell in the open market.

* Co-operative Board Pamphlets.

† See in this connection the account of the Arlington Co-operative Association, at Lawrence, Mass., contained in the Appendix.

APPENDIX.

The following pages present a condensed account of the position of productive co-operation in Great Britain, and of productive and distributive co-operation upon the European continent and in Australia.

For the material from which the account of continental and Australian co-operation was prepared, the Bureau is mainly indebted to the report of a committee upon that subject to the Seventeenth Annual Co-operative Congress, held at Oldham, England, in May, 1885, the authorities upon which said report was based being noted in connection with each country respectively. The matter is of interest in considering the general subject of co-operation, and is of sufficient importance to warrant its presentation here.

As the record of a successful American experiment in distributive co-operation, upon a plan similar to that instituted at Rochdale, may be of value to others proposing to enter the field, we have also included an account of the Arlington Co-operative Association, at Lawrence, Massachusetts.

That form of co-operation known as "profit sharing" is treated in detail in Part II. of the Seventeenth Annual Report of this Bureau (in Part I. of which Report this chapter on distributive co-operation is included), and is therefore not considered here.

CO-OPERATIVE PRODUCTION IN GREAT BRITAIN.

The second step in co-operation, according to the leaders of the movement, is its application to production. The theorists, who have devoted their lives to the advancement of co-operative principles, will never rest satisfied with its application

merely to the business of buying and selling commodities, however admirable the results may appear. To them the whole structure of co-operative distribution is but the foundation of a far nobler edifice. To utilize in production the capital saved in co-operative stores so as gradually to remove competition in industry is the end they hope finally to reach. Meantime their efforts are devoted to arouse the workingmen who are attached to the distributive societies to a deeper sense of the benefits of a co-operative system which would include production as well as distribution, and to overcome the indifference to other motives than those of immediate personal and pecuniary gain.

It is unfortunate that there seems to be no well-matured plan commending itself to general acceptance upon which co-operative production can go forward. Two distinct schools exist : the individualists and the federalists. The first hold that individual bodies of workingmen should start for themselves in productive enterprises, obtaining their capital either from their own savings or by loan. The business should then be conducted independently of the distributive societies, and managed by the workingmen immediately interested, who may, if necessary, go into the open market and secure trade by superior energy or on account of the high quality of their product. The federalists, on the other hand, believe that the federated stores should provide the basis for productive effort ; the capital saved in the stores should be used ; the demand of the stores should supply the necessary market, and the management should be by committee, precisely as the wholesale societies are managed. Either individual societies might begin by manufacturing goods to supply their local needs, or, as would seem more feasible, the wholesale societies, possessing a wider market, and able by their experience accurately to gauge production to demand, might proceed upon the plan already adopted in the Leicester Shoe Works.

The individualist would permit individual shareholders ; the federalist would not, believing such permission dangerous as tending to joint-stockism. Strict adherence to the federalist system, as usually presented, would exclude the worker from participation in profits, except in his function as *consumer* as a member of some store having capital invested in the works, and except as a bonus or gratuity might be given him for

superior work or extraordinary skill. In the works at present conducted by the English wholesale society upon substantially this plan, the workers, as workers, do not share in profits at all.

The difficulties attending both systems, as well as their advantages, are apparent. If the workers provide their own capital and divide the profits among themselves, not alone in proportion to capital but also in proportion to work done, the concern would be strictly co-operative, but its success would largely depend upon the fidelity and talent of the managers, requisite qualities not easily procured, and upon the possibility of securing a permanent and remunerative market. To obtain the latter would involve keen competition with private concerns already well established, or, if several co-operative societies were seeking a market for the same product, keen competition with each other. There is also the difficulty, by no means small, of securing the required capital. The risk is very great, and workmen are poorly equipped to encounter it.

If, to overcome the difficulty as to capital, outside stockholders are admitted, the enterprise loses its strictly co-operative character, jealousy is likely to arise between workers and shareholders (capitalists), and the latter may at any time secure control and the concern become a purely joint stock company.

If, on the other system, the federated societies provide, as they may, both capital and market, the two great difficulties in the way of co-operative production may be overcome; over-production may be guarded against; more or less capital may be utilized as occasion demands, and, practically, loss may be prevented.

But if profits are to be divided among consumers only, that is, if profits are to go to the stores which furnish the capital, and are then disseminated in the form of dividends on purchases to the patrons of the stores, the workers, as such, acquire no benefit not obtainable in private employment. The scheme is, after all, so far as the workers are concerned, not co-operative.

Some federalists advocate a bonus or share in profits to labor. In both schools many shades of individual opinion appear. Mr. Holyoake, for instance, ably advocates the participation of labor, capital, and custom (consumers) in profits; remunerat-

ing capital by a fixed rate of interest, and dividing the remainder between laborers and consumers, always providing that labor shall have an adequate self-protecting representation upon the directory. Such a plan, he believes, can only be adjusted and maintained by the system of federation, while, at the same time, he is for individualism, in the sense of securing the local capacity, the personal interest, and energy of the three parties, laborer, capitalist, and consumer, who, it appears to him, make up the force of co-operation.

Radically opposed to the theory of the consumer's right to share in the profits of production, Mr. J. M. Ludlow, the Registrar of Industrial and Friendly societies, an individualist, would have production carried on by independent unions of workers, for whom, primarily, the profits should be reserved.

Dr. John Watts, however, an eminent federalist, rejects any plan of individual action, as tending to relapse into competition, and would divide the profits arising in federated production among the societies furnishing the capital in proportion to the capital furnished by each, and afterward to their members as dividends on purchases. This scheme, as pointed out by Messrs. Hughes and Neale, must undoubtedly cause the largest share of profits to go to the richer classes, they being the largest buyers; is essentially a division of profits on capital (joint-stockism); and entirely overlooks the worker, as such. "The notion of so carrying on work that the worker may get the full benefit of his labor, after providing for the cost of capital, is replaced by that of so carrying it on that the consumers, whether producers or not, should get the greatest possible benefit out of it." *

Mr. Neale, while adhering to the federative scheme, as diminishing the risk that must inevitably accompany individual action, believes that in any system of co-operative production the worker should acquire the profits, after the remuneration of capital by payment of interest, and that the consumer ought not to share in the profits of production. He believes further,

"That it is quite practicable to carry on production in close connection with a distributive centre, under conditions which will prevent

* *Manual for Co-operators* (published by the Central Co-operative Board), page 133.

any competitive conflict among the producers, without withdrawing from the workers any of the advantages derivable from their work.” *

He has also clearly shown, enforcing his argument by the significant statistics of the extensive Leicester Shoe Works, and of the spinning companies at Oldham, that

“ Large as the total proceeds of any work may be — vast as may be the establishments where the production is carried on — imposing as the result may appear when the net profits of such great works are concentrated in the hands of a few persons — these profits when divided among the host of workers engaged in producing them will make but a small addition to the sum that those workers would earn. Naturally, if they are to be further diluted by division among the large body of persons who may have made purchases, the benefit must be proportionately diminished.” †

And he goes on to suggest that the collective income, instead of being frittered away in minute dividends to each worker, might by agreement be employed in associated action to create better conditions of life, such, for example, as private employers, like Sir Titus Salt, have attempted to confer upon their workpeople, or such as have been secured through the associated homes projected by M. Godin, at Guise.

While these various theories prevail, little has actually been done. Disregarding all such concerns as the spinning companies at Oldham, which, though frequently termed co-operative, are absolutely joint stock companies dividing profits on stock, held at present by workers chiefly, but liable at any time to change ownership, and, in any event, no different in principle or administration from the ordinary joint stock corporation, — there are a few productive societies in Great Britain that permit workers, as workers, to share in profits and are managed by the workers themselves. Many of these have share capital also, to which part of the profits go, and some admit customers to participation in the dividend. The following table exhibits these societies at the beginning of 1884 :

* Manual for Co-operators, page 139.

† Seventeenth Annual Co-operative Congress ; preface to Report, page IV.

Co-operative Productive Societies.

NAME.	Date established.	BUSINESS.	Yearly Sales.	Yearly Profits.	METHOD OF DIVIDING PROFITS.
Arnold Manufacturing,	1868	Hosiery.	£ 200	£ -	Between shareholders and workers.
Airedale Manufacturing,	1872	Alpacas, cords, etc.	5,799	427	Between shareholders, customers, and workers.
Cobden Mills, . . .	1867	Calicoes.	52,264	-	Between shareholders and workers.
Coventry Watchmakers,	1876	Watches.	2,623	278	Between shareholders, customers, and workers.
Co-operative Printers, .	1869	Printers and stationers.	33,589	2,789	Between shareholders, customers, and workers.
Dudley Nailmakers, .	1874	Nailmakers.	1,212	83	Between shareholders and workers.
Dunfermline Manufacturing,	1872	Damask table linen.	1,672	67	No details.
Eccles Manufacturing,	1861	Quilts and toilet covers.	9,767	1,058	Between shareholders and workers.
Edinburgh Printers, .	1873	Printers and stationers.	3,027	236	No details.
Framemakers and Gilders, London,	1858	Carvers, gilders, and general decorators.	6,389	-	Between shareholders and workers.
Hebden Bridge Manufacturing,	1870	Fustian cutters, etc.	22,103	1,980	Between shareholders, customers, and workers.
Howley Park Quarry, .	1872	Stoneworkers.	3,624	500	No details.
Lancashire and Yorkshire Productive,	1873	Flannels.	16,396	43	Between shareholders and customers.
Leek Silk Twist Manufacturing,	1874	Silk thread.	2,688	2	No details.
Leicester Manufacturing,	1876	Hosiery.	6,273	133	Between shareholders, customers, and workers.
Leicester Elastic Web,	1878	Web weavers.	4,493	129	No details.
Sheepshed Manufacturing,	1881	Hosiery.	92	-	Between shareholders and workers.
Sheffield Cutlery Manufacturing,	1873	Knives and scissors.	429	69	No details.
Sheffield Haft and Scale Cutting,	1876	Haft makers.	3,906	125	No details.
Paisley Manufacturing,	1861	Plaids, shawls, etc.	11,891	568	Between shareholders, customers, and workers.
Northamptonshire Productive,	1881	Bootmakers.	1,662	128	Between shareholders and workers.
Walsall Manufacturing,	1874	Lockmakers.	3,986	-	No details.

The above table is extracted from "Workingmen Co-operators," page 103. The same work is also our authority for the statement, attributed to a leading co-operator, that 224 co-operative productive societies registered under the Industrial and Provident Societies Act have been dissolved. Of these, 156 were small joint stock companies with no co-operative element in them; 44 divided profits between capitalists and customers; and 24 between capitalists, customers, and workers.

The Registrar's returns for the year ending December 3, 1883, exhibit 34 so-called productive societies in England and Wales, and 4 in Scotland. But of these, 14 were corn (flour) mills, in which it is not usual to admit workers to share in profits, and two were agricultural.

This brief record appears to be all that co-operative production has at present to exhibit in Great Britain.

CO-OPERATION IN FRANCE.*

The social hopes fostered in France by the political revolution of 1848 were partly realized in the formation of large numbers of co-operative societies. The enthusiasm of the moment and the influence of government patronage stimulated the movement, but few possessed sufficient vitality to long survive. The re-establishment of the empire in 1852 was an event at first decidedly unfavorable to their progress, but in 1864 co-operation at Paris once more revived, and later was assisted by favorable legislation. In 1870, 20 workingmen's co-operative societies engaged in production existed at Paris and at present there are more than 70 such societies. Outside of Paris few such societies exist.

The following details are tabulated from statistics published by the Bureau des Associations Professionnelles :

* Authorities : M. Nicole, of the Consolidated Chamber of the Workingmen's Productive Association of the Department of the Seine. Evidence before a Parliamentary Commission. Report of the Bureau des Associations Professionnelles.

The Co-operative

NAME OF THE ASSOCIATION.

French.	English.
1 Appareils à gaz (Ouvriers fabricants d'),	Working gas apparatus makers,
2 Arconnieurs ferreurs,	Saddle bow binders,
3 Bâtiment (Société générale du),	Builders,
4 Bijoutiers en doré (Association des),	Different kinds of jewellers, {
5 Bijoutiers en double (Association des),	
6 Bijoutiers-joailliers (Association des),	Working bat makers, {
7 Chapeliers (Association générale ouvriers),	
8 Charrons (Association collective des),	Wheelwrights,
9 Charpentiers de la Seine (Association des),	Working carpenters, {
10 Charpentiers de la Villette (Association des),	
11 Cimentiers (Association générale des ouvriers),	Working cement makers, {
12 Cimentiers (Société des ouvriers réunis),	
13 Cochers (La nouvelle association des),	Coachmen or cab drivers, {
14 Cochers (L'Espérance, Association des),	
15 Cochers (Association des),	
16 Cochers (L'union des),	
17 Cochers (L'Alliance, Association des),	
18 Cochers (La Parisienne, Association des),	
19 Cochers (La Moderne, Association des),	Slaters, plumbers, and zinc workers, {
20 Cochers (La Montrougiennne, Association des),	
21 Cochers (Le Progrès, Association des),	Cabinet makers, {
22 Couvreurs, plombiers, zingueurs,	
23 Ebénistes (L'Avenir, Association des),	Reedmakers, {
24 Ebénisterie Parisienne (L'),	
25 Ebénisterie (Association de l'),	Pianoforte makers, {
26 Ebénistes (Société générale française d'ameublement),	
27 Ebénisterie (Association syndic. des),	Musical instrument makers, {
28 Facteurs d'anches,	
29 Facteurs de pianos (Association des),	Tinworkers, lantern, and meter makers, {
30 Facteurs de pianos (L'Union, Association des),	
31 Facteurs d'instruments de musique,	Tin box makers, {
32 Ferblantiers, lanternes, compteurs,	
33 Ferblantiers-boîtiers (Association des),	Model makers, {
34 Formiets (Association des),	
35 Horlogers (Société anonyme des),	Watchmakers, {
36 Imprimerie nouvelle (Association de l'),	
37 Jardiniers (Association co-opérative des),	Printers, {
38 Joailliers bijoutiers à façon,	
39 <i>Journal Officiel</i> (Association co-opération du),	Gardeners, {
40 Limes (Association des ouvriers en),	
41 Lithographes de Paris (Association des),	Jewellers, {
42 Lunetiers (Société des),	
43 Maçons et tailleurs de Pierre (L'union des ouvriers),	Newspaper publishers, {
44 Menuisiers et bâtiments,	
45 Menuisiers d'art et bâtiments,	Working file makers, {
46 Menuisiers en sièges,	
47 Menuisiers en voitures,	Parisian lithographers, {
48 <i>Moniteur des Syndicats ouvriers</i> ,	
49 Opticiens (Association général des ouvriers),	Spectacle makers, {
50 Orfèvrerie (Association ouvrière d'),	
51 Papetiers régleurs (Association des),	Working masons and stone cutters, {
52 Parqueteurs (Société co-opérative des),	
53 Parqueteurs (Association d'ouvriers),	Different kinds of joiners, {
54 Parqueteurs (Association Parisienne des),	
55 Passementiers (Association des ouvriers),	Trades Union newspaper, {
56 Pavés (Association générale d'ouvriers),	
57 Pavés (Association de),	Working opticians, {
58 Peintres en bâtiment (Travail des),	
59 Peintres en bâtiment (L'union des),	Working goldsmiths, {
60 Peintres de Paris (La Sécurité de),	
61 Restaurateurs (Société co-opérative des),	Ruled-paper makers, {
62 Sacs de dames et de voyage,	
63 Sculpteurs de Paris (L'union des),	Inlaid floor makers, {
64 Sculpture (Association co-opérative de la),	
65 Sellerie Parisienne (Association de la),	Working lace makers, {
66 Serruriers en meubles,	
67 Tailleurs (Association générale des),	Working pavers, {
68 Tailleurs de limes,	
	House painters, {
	Co-operative restaurant, {
	Makers of ladies' and traveller's bags, {
	Sculptors, {
	Saddlers, {
	Furniture locksmiths, {
	Tailors, {
	File cutters, {

Societies of Paris.

Date of Formation.	CAPITAL.		Number of Associates.	WHETHER AUXILIARIES SHARE IN PROFITS.		Value of Work Done.
	Subscribed.	Paid up.		No.	Yes.	
	£ s.	£ s.				£ s.
July - 1, 1881	180 0	140 0	15	-	-	- 1
Jan. 24, 1882	20,000 0	5,000 0	7	No	-	3,400 0 2
Dec. 26, 1882	816 0	700 0	191	No	-	8,000 0 3
January, 1882	1,000 0	1,000 0	12	-	Yes	4,480 0 4
July 27, 1882	1,800 0	840 0	160	No	-	1,440 0 5
Dec. 12, 1883	400 0	280 0	26	No	-	- 6
Oct. 26, 1883	400 0	162 17	88	-	Yes	640 0 7
Feb. 13, 1881	606 0	491 16	23	No	-	1,626 16 8
Nov. 21, 1881	3,200 0	3,200 0	40	No	-	24,000 0 9
Aug. 22, 1881	240 0	282 0	183	No	-	40,000 0 10
Sept. 23, 1884	320 0	320 0	17	No	-	16,280 0 11
Mar. 21, 1883	1,760 0	1,080 0	11	No	-	1,200 0 12
Feb. 9, 1884	3,280 0	2,765 19	73	No	-	16,000 0 13
Dec. 9, 1874	24,000 0	18,504 10	41	-	Yes	16,457 8 14
Dec. 1, 1873	14,200 0	14,200 0	102	No	-	120,000 0 15
Feb. 12, 1882	6,080 0	10,000 0	129	-	Yes	- 16
Oct. 1, 1879	6,880 0	5,600 0	105	No	-	- 17
Oct. 1, 1881	8,640 0	7,800 0	43	No	-	- 18
Nov. 30, 1881	9,600 0	7,726 0	54	No	-	- 19
Mar. 21, 1883	1,760 0	880 0	60	-	Yes	- 20
Aug. 27, 1883	800 0	720 0	73	No	-	- 21
Aug. 24, 1879	1,020 0	740 0	27	-	Yes	6,000 0 22
Nov. 30, 1881	2,800 0	1,400 0	48	No	-	20,000 0 23
June 30, 1884	760 0	240 0	130	-	-	2,800 0 24
April 14, 1884	320 0	180 0	19	-	Yes	- 25
July 24, 1884	320 0	320 0	10	-	Yes	4,400 0 26
Dec. 1, 1865	700 0	80 0	125	-	-	7,000 0 27
April 15, 1849	10,448 0	10,448 0	7	No	-	40,000 0 28
April 15, 1865	510 0	625 11	18	No	-	240,000 0 29
July, 1868	7,760 0	6,520 0	6	No	-	6,400 0 30
March, 1875	8,480 0	6,000 0	17	No	-	92,000 0 31
Nov. 17, 1849	3,680 0	2,800 0	106	No	-	140,000 0 32
Aug. 8, 1882	2,320 0	1,544 14	39	-	-	160,000 0 33
Nov. 12, 1869	640 0	393 12	12	No	-	102,000 0 34
Mar. 16, 1881	8,000 0	8,000 0	20	No	-	3,240 0 35
Feb. 5, 1881	600 0	312 0	1,348	No	-	160,000 0 36
Sept. 27, 1848	-	-	30	-	Yes	548 0 37
March, 1866	224 0	224 0	23	-	Yes	- 38
Aug. 6, 1849	8,400 0	6,890 17	21	No	-	88,000 0 39
March, 1885	20,000 0	20,000 0	250	-	-	194,640 0 40
Feb. 21, 1884	89,600 0	53,262 10	112	No	-	120,360 0 41
Mar. 27, 1884	400 0	900 0	15	-	Yes	1,200,000 0 42
Nov. 16, 1848	420 0	245 7	7	-	Yes	- 43
Nov. 4, 1882	240 0	240 0	12	-	Yes	1,235 10 44
Dec. 23, 1864	64 0	64 0	16	No	-	2,640 0 45
Sept. 21, 1881	-	-	-	-	-	306,911 4 46
May 1, 1883	1,000 0	600 0	39	-	-	- 47
Oct. 22, 1881	4,800 0	2,860 0	5	No	-	1,240 0 48
Dec. 3, 1883	2,000 0	1,060 0	116	No	-	64,000 0 49
Aug. 7, 1884	2,400 0	365 4	6	No	-	600 0 50
Feb. 11, 1883	200 0	192 4	12	No	-	1,600 0 51
Dec. 16, 1884	120 0	67 9	6	-	Yes	13,374 6 52
Feb. 17, 1883	120 0	24 0	9	-	-	4,000 0 53
Dec. 27, 1882	600 0	84 0	-	-	-	7,000 0 54
May 7, 1883	6,440 0	660 0	-	No	-	200 0 55
Feb. 10, 1885	1,440 0	1,460 0	-	No	-	15,200 0 56
Feb. 19, 1850	800 0	536 0	-	-	Yes	20,000 0 57
Oct. 15, 1863	816 0	579 16	13	-	Yes	11,200 0 58
Dec. 24, 1868	280 0	28 0	7	-	Yes	5,520 0 59
-	-	-	-	-	-	- 60
-	980 0	440 0	10	-	Yes	- 61
-	-	-	-	-	-	- 62
-	-	-	-	-	-	- 63
-	-	-	-	-	-	- 64
Feb. 4, 1883	880 0	520 0	117	No	-	8,000 0 65
Feb. 19, 1850	120 0	120 0	5	-	Yes	4,560 0 66
Oct. 15, 1863	4,000 0	3,820 0	180	No	-	200,000 0 67
Dec. 24, 1868	640 0	540 0	6	-	Yes	16,000 0 68

The Co-operative Societies

NAME OF THE ASSOCIATION.	
French.	English.
69 Terrassiers de la Seine,	Terrace makers,
70 Tapissiers (Association d'ouvriers),	Working upholsterers,
71 Typographes (Association la co-opération des),	Typographers,
72 Vanniers (Association co-opération des ouvriers),	Working basketmakers,
73 Société co-opérative immobilière,	Society for loans on realty,
74 Société co-opérative (Construction des maisons ouvrières),	} Co-operative building society,

The total number of associates exhibited by the foregoing table is 4,920. These, with the auxiliaries employed, of whom the number does not appear, have done work amounting to £3,560,258 6s. The total paid up capital shown by the table is £223,315 18s.

These societies are usually administered by a council, acting through an executive officer who is termed a delegate administrator, director, or *gérant*. As might be expected some difficulty is experienced in finding capable, active, and devoted managers, and earnest and prudent councilmen. Calmness, moderation, and perseverance, qualities essential to success, are often lacking among associates. But, nevertheless, the condition of the societies is in France considered promising and the outlook is thought to be encouraging.

It will be noticed that in many cases auxiliaries do not share in profits. In such instances the organization would seem to be a form of co-operative partnership composed of workingmen, who share with each other profits in part derived from the labor of auxiliaries who do not share at all. When the profits are thus divided solely on the basis of shares held by the associates, the organization is merely that of a joint stock company, analogous to the Oldham mills. When the associates also share as workers an additional co-operative step is taken, and, finally, when, as in some of the societies, auxiliary workers are permitted to share in profits, the co-operative features become more complete.

The auxiliaries of the Carpenters Association of La Villette are locksmiths, sawyers of planks, and joiners. Instead of

of Paris — Concluded.

Date of Formation.	CAPITAL.		Number of Associates.	WHETHER AUXILIARIES SHARE IN PROFITS.		Value of Work Done.
	Subscribed.	Paid up.		No.	Yes.	
Jan. 1, 1885	£ 80 s. 0	£ 8 s. 0	6	-	-	£ - s. 69
Feb. 27, 1884	294 0	202 12	96	-	-	1,600 0 70
Dec. 26, 1881	400 0	360 0	24	-	-	4,185 2 71
Mar. 1, 1882	80 0	64 0	18	No	-	1,080 0 72
Dec. 15, 1867	5,600 0	5,600 0	369	No	-	19,200 0 73
-	-	-	-	-	-	- 74

participating in profits they are paid a larger wage than that allowed by private employers. Provision is also made for an allowance to any auxiliary who is injured while at work, usually amounting to one-half the customary wage for the time the disability continues.

The auxiliaries employed by the Association of Working File Makers, although not allowed to share in profits, are admitted as associates, without the payment of any fee, after six months' employment by the society. In other societies, notably the Association of Pianoforte Makers, a similar custom prevails.

Many societies have a fund for the care of superannuated members, for insurance in case of accident or death, etc. Most have certain conditions as prerequisites to membership, designed to secure the moral, physical, and industrial fitness of those who desire to join. Some require candidates to serve a period of probation before admission.

The mode of allotment of profits varies. In some societies a fixed rate of interest is paid to shareholders, and the balance, after providing for the maintenance of reserves, insurance, and similar funds, if any, is divided among associate workers, or among associates and auxiliaries, as the case may be. Several societies, which permit auxiliaries to share, restrict the amount of profit out of which such share must be paid. For instance, in the General Society of French Cabinet Makers, auxiliaries participate in 25 per cent of the profits, and the Society of Furniture Locksmiths permit auxiliaries to share in profits in the proportion of 10 per cent on the proceeds of their work. Some societies divide all profits on the basis of work performed.

The Association of File Cutters, in the division of profits, awards to capital 20 per cent and to labor 80 per cent.

CO-OPERATION IN GERMANY.*

German co-operation has three modes of development, viz: people's banks, consumers' societies, and trade societies. Of these the people's banks — a form of co-operative savings bank, — are the most numerous, the trade societies ranking next. In 1883, the number of each class was as follows: people's banks, 1,910; trade societies, 1,031; consumers' societies, 676.

The trade societies so-called include two classes, industrial societies and agricultural societies. These may be more minutely classified as follows:

Industrial Societies.

Raw material supply,	. . . . .	145
Magazines,	. . . . .	59
Productive,	. . . . .	149

Agricultural Societies.

Agricultural consumers' supply,	. . . . .	305
Implement supply and stock raising,	. . . . .	171
Productive agriculture,	. . . . .	198

Total industrial societies, 353; total agricultural societies, 674; societies not included under the foregoing heads, 4; aggregate, 1,031.

The co-operative movement in Germany began with the raw material supply associations founded by Schulze-Delitzsch, for the purpose of enabling handicraftsmen in different trades to purchase by wholesale the materials required in the prosecution of their industries so as to allow them to compete with extensive manufacturers. The object of these societies was to uphold hand labor against the encroachments of factory industry, by thus obtaining for handworkers through association the advantages possessed by capitalists, and to deliver them from middlemen who furnished inferior material at high prices.

“Where the raw material societies have organized themselves

* Authority: Dr. Schneider of Potsdam.

according to the advice of Schulze-Delitzsch, and avoided the errors against which he over and over again warned them, they have accomplished this object to the benefit of the German handwork, and preserved to many German handicraftsmen their independent businesses. If we consider that, according to the trade statistics of 1882, there were in the shoemaking trade alone 245,118 independent handworkers, who, in spite of the prophecies uttered more than 20 years since by Ferdinand Lassalle and Karl Marx, still carry on the shoemaking business on their own account and will not consent to be wage-receivers, we cannot close our eyes to the fact that millions of Germans have the most pressing interest in the preservation of handicrafts. * * * * *

The raw material societies of the handworkers could have given greater help in this contest if several of them had not ruined themselves by grave mistakes, because, unfortunately, the bad custom of the handworker giving credit — sometimes long credit — to his customers, without any compensation, is widely spread in Germany. The workers often demanded of the raw material societies to sell to them on credit at the same price as if they had paid ready money. Many societies have given way to this unjustifiable claim, and sunk under the consequent loss of capital and interest. Hence the number of raw material societies is not increasing.” *

The 145 raw material societies included the following trades : joiners and instrument makers, 21 ; spinners and weavers, 17 ; meal and bread producers, 14 ; printers and lithographers, 11 ; tailors, 10 ; brewers, 7 ; butchers, 7 ; carpenters and masons, 6 ; cigar makers, 6 ; clock and watch makers, distillers, metal workers, and shoemakers, 5 each ; machinists, and sugar makers, 4 each ; gilders and potters, 3 each ; brush and comb makers, miners, personal services, and sewing machine makers, 2 each ; bookbinders, glass makers, plumbers and lacquerers, and starch makers, 1 each.

The industrial magazines are co-operative commission concerns whose business it is to sell at a common magazine or depot the goods produced by their members. The larger number are engaged in the sale of carpenters and joiners' products.

The industrial productive societies are mainly confined to hand labor and to the smaller industries. A notable exception is that of the largest German manufactory of chronometers,

* Dr. Schneider of Potsdam.

which is conducted on the co-operative plan. Co-operation when applied to factory labor in Germany has not been very successful.

“Productive societies formed for the purpose of selling their wares to the consumers’ societies, and supplied with capital by them exist * * * only as exceptions. A society of this kind was the Berlin Bakers’ Society, which long since came to grief through bad management. Most of the productive societies have been founded without any reference to the wants of the consumers’ societies, by small groups of artisans or laborers who were all to be at once employers and workers. The business of the society was their only source of income. If anything went wrong with their business, all the members came into difficulty. This may in many cases have bound all the members together, and steeled their energies, but it tended also to make them indisposed to the admission of new associates, which naturally came into question only when the business was again going on prosperously. The members who had fought through the time of need alone, wished alone to reap the fruits of the good time. This was not associative, and was vigorously opposed by Schulze-Delitzsch, but it was natural, and explains the circumstance that in many old and successful productive societies the number of members is slowly diminishing. In some, though this is not publicly known, the number of members has shrunk to such an extent that they are no longer societies, but have become trading partnerships.” *

The agricultural co-operative societies appear to be quite successful and are increasing.

The agricultural consumers’ supply societies afford their members facilities for purchasing in common seeds, manures, etc., and secure to them the advantage of subjecting to chemical analysis goods offered to them for purchase, so as to test the genuineness of the articles. Others, existing among land-owners, known as implement societies, provide agricultural machines owned in common and loaned to members. Still others have for their object the improvement of breeds of cattle, and, finally, the productive agricultural societies are engaged in dairying and wine making.

There exists in Germany a co-operative union founded by Schulze-Delitzsch, and, since 1883, a union of the agricultural

* Dr. Schneider.

societies, having for its special object the advancement of this form of co-operation.

Of the 676 consumers' societies only 172, having a total membership of 110,433, made returns in 1883. These present the following statement :

Number of societies making returns,	172
Number of members,	110,433
Total sales,	£1,634,215 2s.
Average sales of each society,	9,501 5s.
Members' capital,	157,625 9s.
Reserves,	73,883 13s.
Loan capital,	150,517 9s.
Amount owing for goods,	20,494 9s.
Net profits,	123,114 14s.
Amount due from members (in 48 societies),	6,112 5s.
Applied to educational purposes,	1,250 9s.

The largest consumers' society is at Breslau. It had, in 1883, 22,775 members, and during that year its sales amounted to £241,635 2s. ; the net profit being £25,357 18s. A large steam bakery is conducted by the society.

Building societies have met with poor success in Germany, and have been unable to compete with private enterprise.

Dr. Schneider has compiled the following statistics respecting the membership of the people's banks and consumers' societies, and concerning which he makes this statement :

“I add a tabular view of the composition of the members in the people's banks and consumers' societies, classified according to their occupations, whence the difference in the character of these two classes of societies, notwithstanding the similarity of their objects, appears. The members of the raw material and productive societies belong, with few exceptions, to the corresponding trades, although, so far back as 1868, the productive societies were urged, in order to increase their power of bearing losses, to draw in non-workers as members.”

The table shows the percentages of membership of each class in the people's banks and consumers' societies based upon the returns for 1882 and 1883. Dr. Schneider is of the opinion that had the statistics covered all the societies instead of those

making returns only, the result would not have been materially different.

Classification of Membership in People's Banks and Consumers' Societies.

CLASSIFICATION OF MEMBERSHIP.	PEOPLE'S BANKS. Percentages by years.		CONSUMERS' SOCIETIES. Percentages by years.	
	1882	1883	1882	1883
Independent land cultivators, gardeners, foresters, and fishers,	25.4	25.4	3.7	3.7
Assistants and laborers of the foregoing,	3.0	3.1	3.9	3.87
Manufacturers, and persons engaged in mining and building,	3.65	3.6	1.6	1.7
Independent handworkers,	31.2	30.9	15.3	15.0
Workers in factories and mines, and assistants of handworkers,	4.7	4.8	40.4	41.2
Independent traders and dealers,	9.6	9.6	4.0	4.0
Clerks and assistants to traders,	0.7	0.7	1.6	1.4
Carriers, shipowners, and innkeepers,	5.2	5.1	2.5	2.4
Letter carriers, employes in railway, telegraph, and post offices, laborers on railways, mariners, and waiters,	1.9	1.9	7.7	7.2
Male and female servants,	1.6	1.0	1.7	2.8
Physicians, apothecaries, teachers, artists, writers, officials of church, state, or municipal bodies,	6.7	6.7	10.5	10.8
Persons of independent income,	7.4	7.6	7.1	6.5
Number of societies making returns,	819	825	166	160

CO-OPERATION IN AUSTRIA.*

In Austria, the statute of November 26, 1852, permitted the formation of co-operative societies with unlimited liability. An important change was effected by the law of July 1, 1873, which required all societies "the number of whose members is unlimited, which seek to benefit their members in their trade or household economy by carrying on business in common" to register at the government registration office. Such societies may be organized "either with or without limitation of liability, as they determine, the measure of liability in the first case being fixed by their rules."

Unregistered societies formed under the previous law must register upon making any change in their rules and are gradually becoming extinguished. By a subsequent statute, January 1, 1880, societies which confine their dealings to their own members are exempt from the traders' tax. Income tax

* Authority: Dr. H. Ziller, of the Austrian Co-operative Union.

is levied on their net profits, with exemptions and allowances when the yearly income is less than 2,300 florins.

According to the report of Dr. Ziller, who is at the head of the co-operative societies formed in the Austrian empire, the total number of such societies within Austrian territory in 1881 was 1,515. Of these, 317 were unregistered and 1,198 registered. Five hundred and seventy-two registered societies were with limited liability and 626 unlimited. One thousand one hundred and twenty-nine, or 74.5 per cent of all the societies, were people's banks; two hundred and thirty-five, or 15.5 per cent, were distributive societies; and the balance were as follows: raw material supply, 6; agricultural material supply, 14; stores, 3; artisan productive, 41; agricultural productive, 61; building, 5; trading, 10; assurance, 2; various, 9. These statistics include Lower and Upper Austria; Lutzburg; the Tyrol; Vorarlberg; Styria; Carinthia; Krain; the Coast Land; Bohemia; Moravia; Silesia; Galicia; Bukowina; and Dalmatia.

Co-operative distribution does not appear to be very flourishing. It is stated that the number of such societies is scarcely half that formerly existing. The reasons given for the failure of those that have been dissolved are commercial depressions affecting the earnings of those connected with them, heavy taxes assessed on them as traders in certain districts, and bad management of a large number which were formed for political purposes.

Besides the societies which deal in the usual groceries in common demand, a few grind corn, some have bakeries attached, and some sell butcher's meat; but the latter has not generally been found profitable. Most of the societies sell beer and spirits. Drapery and shoes, crockery, hardware, and wooden goods are supplied by some. The credit system exists and the practice of giving credit appears to be increasing. As a consequence the societies which made returns were owing more than 33 per cent of the value of their stock in trade. Less than half the societies made returns for the year 1881, and some of these returns were imperfect. Of those that made returns the average membership was 630. The information as to application of profits was especially defective. The following general statement is made:

“Many societies, which sell at the lowest practicable prices, make no division of profits, but carry them wholly to reserve. Others, which sell only to their own members, have introduced the practice of distributing profits as dividend on purchases, with very favorable results in their business, which are more favorable than those obtained in the earlier method, adopted from the practice of the people’s banks, of dividing the profits in proportion to the paid-up capital, which is preserved in the case of the profits from the sales to non-members.”

Of the artisans’ productive societies many, it is stated, have failed because formed to take control of private enterprises that had not been successful. When formed independently by workers possessing sufficient capital to enable them to avoid debt they have succeeded when there was a fair opening for business. Some have failed on account of internal dissensions. Although 41 productive societies of the artisan class are included in the statistics we have quoted, only 12 made returns for the year, and the details are too meagre to afford much light as to the general condition of all the societies. Taxation, in the form of trading licenses, appears to seriously interfere with the prosperity of these societies and, for local reasons, to discriminate against them as compared with private concerns.

Most of the agricultural productive societies confine their operations to dairying. Scarcely any details appear as to these or the other societies enumerated, very few having made returns.

CO-OPERATION IN DENMARK.*

Co-operation in this country appears to be confined to consumers’ distributive societies. About 150 such societies are believed to exist. Seventy have been grouped in a wholesale union.

The source of co-operative effort here seems to have been the English societies, the success of which impressed the late Pastor Sonne, who published a work entitled “Workmen’s Co-operative Societies in England,” thus leading directly to the formation of Danish societies. Since the year 1870, the movement has grown in importance and appears likely to increase

* Authority: Mr. J. Andrew of the Co-operative Wholesale Society, Copenhagen.

still further under the present organization. A monthly periodical devoted to the interests of co-operators is now issued by the wholesale society.

CO-OPERATION IN SPAIN.*

Co-operation has as yet made no progress in Spain. One or two small associations exist, but not in a very flourishing condition. A society established at Bilbao, and also one in Gijon, soon failed on account of bad management.

CO-OPERATION IN HUNGARY.†

Distributive co-operation in Hungary, although instituted some years ago, has made little progress. Of late slightly more life has been apparent in the movement, but statistics respecting it are very scanty. The statistical bureau of Hungary has no data upon the subject.

Productive societies are not numerous, the chief examples existing in Buda-Pesth. The chief avenue of co-operative effort is the system of banking analogous to that of Germany.

Dr. Ziller, of the Austrian Co-operative Union, has presented the following statistics for the societies in Hungary, Croatia, and Slavonia, in the year 1883: Total number of societies, 357; people's banks, 308; consumers' societies, 16; raw material supply, 2; depôts (for selling), 3; agricultural aid societies, 2; artisans' productive societies, 6; agricultural productive societies, 7; assurance societies, 8; miscellaneous, 5.

Five of the consumers' societies show collective sales amounting to 234,468 florins; share capital, 33,231 florins; reserve fund, 33,561 florins; loans, 1,822 florins; indebtedness for goods, 6,222 florins; value of stock at end of year, 45,228 florins; due from members for goods sold on credit, 17,288 florins.

The credit system universally prevails. The artisans' productive societies represent the following trades: Clothmakers, 2; brewers, marble workers, iron workers, and lockmakers, 1 each.

* Authority: Mr. Robt. R. Evans, English Consul, Bilbao.

† Authorities: Dr. Stephen Bernát, of the Ministry of Agriculture, Buda-Pesth. Dr H. Ziller, of the Austrian Co-operative Union.

The agricultural productive societies represent dairying, vine culture, and the production of silk.

CO-OPERATION IN ITALY.*

The co-operative movement in Italy began with the political unification of the country, as part of the general progress of the time. People's banks upon substantially the German model were among the first, and are to-day leading examples of Italian co-operative effort. They have increased from 4 in 1865 to 252 in 1883, the capital in the latter year being about £2,120,000. They have been very successful, and of great benefit to certain classes, chiefly the middle class traders and artisans, but have not materially aided laborers, or the masses of the working population. Other forms of co-operative credit and savings institutions are in progress or contemplated, among others the following :

“A certain number of small agriculturists, generally the very smallest proprietors or farmers, unite themselves into a society with unlimited liability. On this guarantee the society contracts loans at the lowest attainable rate of interest, and out of the sum thus collected makes advances to their members who apply for them, at a somewhat higher rate. The bank is to act also as a savings bank. These institutions are specially agricultural, and satisfy the need for small advances, at long periods of repayment, keenly felt by a class of agriculturists numerous in the Italian provinces, that of the small proprietors who cultivate their own land, of the small farmers, and also, in certain cases, of the agricultural laborers, who sometimes cultivate a field on their own account.”†

With these banks agricultural clubs are sometimes united.

Distributive co-operation is in Italy well known, but the movement in this direction lacks organization. The mode of administering such societies varies. Some are conducted on the Rochdale plan. Others are workingmen's societies providing various kinds of provisions for members exclusively. A still different class are associations securing special rates for their members upon purchases from private shopkeepers. About

* Authority : Dr. Ugo Rabbeno, Reggio Emilia, Italy.

† Rabbeno. Co-operation in Italy. Translated by E. V. Neale. Co-operative Printing Society, Manchester, England.

8,000 persons united in societies upon the latter basis in 1880. There is still another class formed by railway employés, for the purpose of obtaining provisions of good quality at low prices. These are joint stock societies analogous to the civil service supply societies of England. The first association of the sort was founded at Turin, in 1873, with 53 members and a small capital. In 1883 it had 2,307 members and more than 900 associates, its sales amounting to about £40,000 in that year. Similar societies, all of which have made rapid progress, exist at Milan, Florence, Naples, Sampier d'Arena, Genoa, Verona, and elsewhere. In general, they sell at the lowest possible prices, pay no interest on shares, confine their sales to their own members, and carry the meagre profit upon sales to a reserve fund.

The general consumers' societies were at first based on the Rochdale plan, but owing to differences in national characteristics this plan was not generally successful in Italy, and at present the greater number do not attempt to pay to their customers dividends on purchases as do the English societies, but rather endeavor to sell at lower than ordinary market prices, carrying profits to a dividend on stock. The chief advantage derived from such societies is considered to be their restraining effect upon private retail shopkeepers, compelling the latter by force of competition to sell their goods at fair prices. The range of goods supplied is narrow, being principally confined to bread, flour, grain, vegetables, macaroni, and vermicelli. In some cases, meat and fish are added.

The number of consumers' societies in 1878 was ascertained by government inquiry to be 58, and they are supposed to have considerably increased in number since, but no definite statistics exist.

Dr. Rabbeno, while taking a hopeful view of the progress of distributive co-operation, after mentioning certain localities in which from his personal knowledge such progress has been marked, conservatively adds :

“With all this we must not delude ourselves, nor take refuge in equivocal statements. Co-operation for consumption, as it is practised in Italy, exercises a beneficial influence, especially by contributing to keep down the prices of articles of first necessity. But

this influence is very limited. Besides, the greater part of the Italian consumers' societies are not very flourishing. They lead a rather straitened life. On the whole, co-operation for consumption in Italy is not yet a success. We may hope that it will become such."

In commenting upon this, Mr. Neale, Secretary of the English Co-operative Union, remarks :

"The people's banks appear to me to form in Italy indirectly a serious hindrance to the spread of co-operation for consumption. By furnishing, through the credit given by them, a support to the small traders, they make the triumph of co-operation, which is in continual conflict with this class of traders, more difficult."

In the country districts of Lower Lombardy a system of co-operative bakeries exists, founded by Rinaldo Anelli, a priest of the village of Bernate Ticino. The farmers and farm laborers suffered from poor food owing to insufficient means for individually drying and preserving the grain from mould, especially during wet seasons, although it formed their chief reliance for subsistence. To meet this peculiarly local need Anelli said to the agriculturists :

"We will construct a bakehouse. You shall bring to this bakehouse your grain. Here we intend to get it well dried that it may keep well. We will make a contract with the miller to grind it on fair terms. We will make it into bread on the best system and in the most economical manner; and we will give you as many loaves of bread as will correspond to the corn that you have brought." *

The instant success of the scheme, which has been elsewhere copied, affords a marked instance of the advantages of mutual effort under certain favorable conditions.

Productive co-operation is limited to a few societies, and, although some success is to be noted, is still in the experimental stage. The oldest and most important society is the Artistic Glass Society of Altare, founded in 1856, and for a time subjected to government opposition. Its original capital was only 14,385 lire, about £463, but the members by carry-

* Co-operation in Italy.

ing to capital monthly instalments of their wages increased it rapidly until, in 1883, it amounted to about £16,639. The value of product in the latter year was about £21,196.

The Co-operative Labor Society at Ismola, manufacturing earthenware and kitchen utensils, was founded in 1874 by Guiseppe Bucci, who gave up to his workmen his own establishment, for which they paid him by instalments. It has been reasonably successful.

In Bologna there are six productive societies engaged in hemp dressing, shoemaking, building and woodworking, leather cutting, glove making, and printing. They are all small, but are said to be exerting a good influence. At Milan, there is a co-operative society of marble workers, and one of laundresses; at Bandeno, one of weavers; at Schio, one engaged in railway and tramway construction, and at Turin, one of working tailors, dressmakers and sempstresses.

The customary division of profits is between shareholders and workers. At Altare and Ismola three per cent is first paid to shareholders, and of the remaining profit 30 per cent is carried to a reserve fund; 25 per cent to a subsidy fund; 30 per cent to shareholders, and 15 per cent to workers in proportion to the number of days each has worked. Members must become shareholders within four years or leave the society, a requirement that eliminates the thriftless and undeserving.

Another form of productive co-operation in Italy should be noticed,—the co-operative associations of day laborers. These arose among the agricultural workers of Romagna, and they had in view the emancipation of field laborers from the power of contractors whose custom it was to control every extensive operation in road making, earthwork, etc.; farming out the work to sub-contractors and reducing wages to the lowest point so as to swell profits to themselves without regard to the rights of the laborers dependent upon them. The work, it will be seen, is very simple, requiring little capital and limited skill, thus rendering it easy of performance upon the co-operative plan. The meagre capital required was readily obtained by savings from wages, the par value of shares being placed at a low figure. Almost the only outlay required was for pickaxes, barrows, etc., and in many cases these were already possessed by the workmen. The plan of operation was simple. Large

contracts are taken by the society at fixed rates, and sublet in sections to members, who work by the piece. By this plan individual remuneration is in proportion to the work performed. The workers become directly interested in the work and their efficiency is proportionately increased. The middleman is abolished, and the laborer is brought into immediate relations with the proprietor who controls the undertaking. Under these advantages men who previously earned from $7\frac{1}{2}d.$ to $1s. 2\frac{1}{2}d.$ a day have increased their wages to $2s. 5d.$, and in some cases to $3s. 2\frac{1}{2}d.$ or $4s.$ daily. The first association of this sort, formed at Ravenna with 300 members, grew to a membership of 3,000 within a year. Others upon the same plan are working well.

CO-OPERATION IN SWEDEN.*

Co-operation in Sweden, as in Norway and Finland, is still awaiting development, but owing principally to the efforts of Lars Oscar Smith, a wealthy manufacturer of Stockholm, its future is hopeful. Mr. Smith became interested in the subject by the study of foreign experiments, and especially by witnessing what had been accomplished in Great Britain. He first formed in Stockholm the Sättskapet Arbetarnes Ring, or Workmen's Ring Society, and inspired by this example, 80 similar societies sprang up in the Swedish provinces. An important object of these societies was emancipation from the "ring" rule carried on by the combined proprietors of brandy shops and public houses.

The original Workmen's Ring Society, after variations of fortune, was incorporated during October, 1884, under the name of the Aktiebolaget Arbetarnes Ring, or Workmen's Ring Society, limited. In its corporate organization this society consists of two sections, A and B; the first a wholesale and the last a retail department. To aid the society, in whose welfare he was deeply interested, Mr. Smith supplied the capital which the workmen lacked requisite to conduct the wholesale department, viz., 100,000 Swedish crowns, representing 20,000 shares. The Section B, retail, is provided with capital upon

* Authority: Mr. A. W. Schulman, of the Aktiebolaget Arbetarnes Ring, Stockholm.

the basis of five crown shares in groups of 500 shares each, only one share to be held by each member. Mr. Smith's connection is upon the following terms: six per cent is to be paid him upon his investment; the balance of profits acquired in both sections is to be carried to a reserve fund until the latter becomes 100,000 crowns, whereupon the reserve is to be used in taking up the shares held by Mr. Smith, who is to go out of the concern. By this plan the shareholders of Section B will ultimately acquire the wholesale business of Section A out of the profits arising from their trade.

The sections are governed by committees. Whenever a sufficient number of persons will subscribe to take up a group or block of shares in Section B, and will pledge themselves to support a store operated by the capital thus supplied, such a store is to be opened, and becomes a department of the society. The retail section therefore admits of indefinite extension, although, as the organization is recent, few stores have yet been started. In general features the organization is based upon that of the English societies, that is, a wholesale department intended ultimately to be owned and operated by a federation composed of numerous retail associations. Unlike the English stores which began with the retail departments and by natural growth developed their present complete organization, the Swedish societies, by the aid of the capital supplied by Mr. Smith, have at once the advantages of a wholesale department, with the possibility of acquiring its full ownership in the future.

The business of the Swedish Workmen's Ring is at present confined to groceries and the products of butchering, together with a co-operative steam kitchen for workingmen, originally established by Mr. Smith but now operated as a department of the society.

Mr. Smith is also the promoter of a co-operative banking society, the Aktiebolaget Arbetareingens Bank, having a capital of more than 300,000 Swedish crowns, in shares of 25 crowns (£1 8s.) each, one fifth held by Mr. Smith and the balance held by about 8,500 workingmen.

CO-OPERATION IN SWITZERLAND.*

About 130 distributive societies are in operation in Switzerland, of which nine only existed prior to 1860. The larger number are in the cantons of Zurich, Bern, Saint Gallen, Neuchâtel, and Glarus, though some are found in every canton except Schwytz, Uri, Unterwald, and Appenzell-Interieur.

The majority of the societies, according to their professions, place chief stress upon securing supplies free from adulteration, and the moral advantages of co-operation, rather than upon low prices. These are mainly conducted by the German-speaking population. On the other hand, the minority aim at low prices chiefly, and of these three-fourths are French.

The capital invested in the societies is approximately as follows :

Share capital, 109 societies,	. . . . .	1,973,779 francs.
Reserve fund, 83 societies,	. . . . .	722,528 francs.
Bond investments, 9 societies,	. . . . .	430,921 francs.
Total,	. . . . .	3,127,228 francs.

Societies not represented in the above returns would, if included, probably enlarge the total to 3,250,000 francs. The total number of shareholding members has been estimated at 30,000, the total annual sales at 13,000,000 francs, and the total annual profits at 1,500,000 francs. The moral results attending co-operation in England also appear in Switzerland. No Swiss co-operative union has yet been established.

CO-OPERATION IN THE NETHERLANDS.†

Co-operative societies in the Netherlands have a legal sanction in the statute of November 17, 1876, and, although a few societies had been founded previously, the progress of the movement rests upon this statute.

The General Dutch Workmen's Union (*Het Algemeen Nederlandsch Werkliedenverbond*) and the Society for Self Help (*Vereeniging Eigen Hulp*) are corporations founded for the purpose of promoting co-operative societies and extending co-

* Authority : The Journal de Genève, March 6, 1884.

† Authority: J. Th. Braun, of the Hague.

operative principles. The first has its headquarters at Amsterdam, and the latter at the Hague. Both maintain newspaper organs.

The following co-operative societies have been established since 1876 :

Co-operative savings and advancing banks,	8
Consumers' societies,	23
Co-operative bakeries,	2
Co-operative butchering establishment,	1
Building societies,	13
Agricultural societies,	3
Society for managing funerals (undertakers),	1
Total,	51

Divisions of the Workmen's Union exist in several towns and have founded small associations administered under domestic rules and not incorporated. The co-operative savings and advancing banks are located at Amsterdam, The Hague, Leeuwarden, Middleburg, Goes, Enschede, and Veendam.

Most of the consumers' societies are upon the limited liability plan. The cash system is generally adhered to. Some sell only to members at as low rates as possible.* Others sell to every one and divide profits among members yearly in proportion to consumption, allowing undrawn dividends to remain on interest.†

The two co-operative bakeries enumerated are in successful operation at the Hague and at Koog aan de Zaan (North Holland) respectively. At the Hague, members upon joining pay 1s. 8d. In April, 1885, the society had 1,050 members. Dividends are paid in bread during the year as demanded, each member's dividend being in proportion to his consumption during the previous year. At Koog, the yearly surplus is divided among widows of deceased members, upon the basis of the consumption of the recipient during the previous year.

The agricultural societies conduct the business of transporting and selling farm produce for the common account of members, in foreign and native markets ; besides which one society has a productive character.

* Civil service plan.

† Somewhat similar to the Rochdale plan.

The co-operative associations that belong to the Society for Self Help have a common agency for the purchase of supplies in the *Gezamenlyke Inkoop van Eigen Hulp*, at Rotterdam, which, though loosely organized, is really the germ of a whole-sale society.

A division of the Society for Self Help devotes itself to the dissemination of supplies among army and navy officers, and is similar to the army and navy supply societies in England, although at present rather limited in its operations.

CO-OPERATION IN AUSTRALIA.*

The leading co-operative society in Australia is the Equitable Co-operative Society, of Melbourne, administered on the Rochdale plan. Business was begun in 1882, and certain errors of management due to inexperience having been remedied, the society is now firmly established and progressing rapidly. Early in the present year, 1885, the number of members was 1,990; paid up capital, £46,100; and deposits, £7,000, drawing interest at five per cent.

The departments include groceries, hardware, wines and spirits, crockery, boots and shoes, drugs and chemicals, stationery, drapery, millinery, carpets and upholstery, tailoring and dressmaking. The number of employes in the distributive service is about 90, one-third of whom are boys and girls. About 56 productive employes are also engaged. A monthly journal, called the Equitable Co-operator, is published by the society in its interests and circulated free of charge. Goods are delivered free to purchasers in Melbourne and suburbs. An experienced buyer is employed in London, and about one-half the stock in trade is imported.

Some other distributive societies exist in Australia, called co-operative, but mostly upon the joint stock plan. Under the influence of the Equitable Society co-operation in that country will no doubt be further developed.

* Authority: Mr. William Nuttall, Secretary of the Equitable Co-operative Society, Melbourne.

THE ARLINGTON CO-OPERATIVE ASSOCIATION, AT LAWRENCE, MASS.

Distributive co-operation in the United States has been tried upon various plans, notably under the patronage of the Sovereigns of Industry, Patrons of Husbandry, Knights of Labor, and similar organizations. Being in most instances incidental only to the main purpose of such orders, the fate of these distributive stores has usually been determined by the success or failure of the primary objects of the organization.

In Texas a co-operative wholesale society and about 150 retail stores are in existence in connection with the order of Patrons of Husbandry.* Isolated experiments, not successful, have been made in New York City and in Brooklyn. The Arlington Co-operative Association, at Lawrence, Mass., however, furnishes an example of successful American distributive co-operation on substantially the Rochdale plan.

The association is limited to employes of the Arlington mills. In this feature of limitation the plan of the English stores is not adhered to, as membership in the latter is not restricted. Officers are elected annually, consisting of a secretary, treasurer, and ten directors, one of whom is chosen president by the board, and regular quarterly meetings are held. Special meetings may be called by the president with the consent of a majority of the directors, and must be called upon the written request of ten members. Auditors are chosen annually by the stockholders by ballot. The manager of the store is selected by the directors, and is at present a thoroughly competent person trained in the principles of distributive co-operation in England.

The administration of the society is similar to that of the English societies which we have described. Three members of the board of directors constitute an advisory committee whose duty it is to consult with the manager as to purchases of stock, and to approve all bills before the same are paid by the treasurer. The latter officer is placed under bonds. The manager is held responsible for the correct accounting of stock in trade, makes a daily report of sales and accounts to the treasurer,

* J. B. Long, Rusk, Texas.

and takes account of stock quarterly. He gives such bonds as the directors require for the faithful performance of his duties.

Members may hold from one to two hundred shares. The par value of shares is five dollars. Members upon joining pay an initiation fee of 50 cents, all sums so received being carried to the sinking fund, to which fund is also carried not less than ten per cent of profits annually. Under the rules the sinking fund is to be allowed to accumulate until it shall amount to 30 per cent in excess of the capital stock. Amounts carried to the sinking fund, and other sums in excess of the business needs of the association, are placed on deposit in the savings bank until sufficient in the aggregate to purchase five shares of Arlington mills stock, when the deposit, at the discretion of the directors, may be withdrawn and invested in such stock under such provisions as the treasurer of the corporation and the State law may require. "On all certificates of stock thus issued there shall be endorsed the provision that interest shall be paid at the rate of 1 per cent less than the average dividend declared by the Arlington corporation for the current year."* This provision as to investments, taken together with the fact that members must be employes of the Arlington corporation, introduces indirectly a productive element.

The cash system is enforced. No intoxicating liquors are sold. Sales are made at the average retail market price. Each stockholder has one vote in business meetings. Shares are withdrawable after thirty days' notice, or if, for any reason, payment is delayed after thirty days upon shares which a member has duly signified his intention to withdraw, such shares may be transferred to any other member who has not already the maximum number of shares to which he is entitled under the rules; but no transfer can be made to non-members, unless by the consent of the directors, in writing, signed by the president and secretary, and entered upon the records of the association.

After providing for the sinking fund, interest on capital stock at the rate of five per cent annually, and the payment of taxes, profits are divided quarterly in proportion to the purchases of the recipients, non-members sharing at half the rate allowed to members. After one dollar has been paid in on

* By-laws of the Association.

stock subscribed for, the subscriber is entitled to a full dividend. Dividends and interest declared on stock may remain on deposit. Interest on money paid in for shares commences on the first of each month. No interest is paid on shares withdrawn before the end of the quarter. When the undrawn dividends and interest placed to the credit of any person amount to the par value of one share, interest is declared on the accumulation in the same manner as provided for money paid in for shares, provided that such accumulation, together with the original shares invested, shall not exceed the par value of 200 shares.

The association was incorporated July 8, 1884. Business was begun September 15, 1884, and the first fiscal year was closed October 1, 1885. The average capital for the year, \$3,320, was turned over more than eleven times and thus realized a return of nearly 74 per cent in less than 13 months. The following statistical statement from the directors' report exhibits the uniform progress of the association :

Progress of the Arlington Co-operative Association.

CLASSIFICATION.	Total Sales.	Gross Profits.	Salaries, Expenses, and Interest.	Net Profits.
First quarter, 15 weeks,	\$10,823 89	\$1,743 62	\$1,024 93	\$718 69
Second quarter, 13 weeks,	8,783 92	1,479 52	954 98	524 54
Third quarter, 13 weeks,	8,615 01	1,087 15	830 46	256 69
Fourth quarter, 13 weeks,	9,967 12	1,809 75	1,036 61	773 14
Totals,	\$38,194 94	\$6,120 04	\$3,846 98	\$2,273 06

Progress of the Arlington Co-operative Association — Concluded.

CLASSIFICATION.	Profits divided.	Carried to Sinking Fund.	Interest on Capital.	Total Return on Capital.
First quarter, 15 weeks,	\$544 54	\$174 15	\$51 13	\$769 82
Second quarter, 13 weeks,	449 44	75 10	40 48	565 02
Third quarter, 13 weeks,	348 58	—91 89*	40 89	297 58
Fourth quarter, 13 weeks,	607 42	165 72	40 74	813 88
Totals,	\$1,949 98	\$323 08	\$173 24	\$2,446 30

* This amount deducted.

The totals of the foregoing table afford the basis for the following statement: The gross profit amounts to 16.02 per cent on sales; salaries and expenses 10.07 per cent on sales; net profits 5.95 per cent on sales; the profits divided represent an average on checks returned of 6.24 per cent for full dividend and 3.12 per cent for half dividend; the sinking fund represents more than 14 per cent of net profits besides initiation fees; the interest is 5 per cent on capital, and the total return on capital is 73.68 per cent.

At the close of the first year's business the share capital represented 664 shares; merchandise in stock, including dry goods and fuel, amounted to \$2,554.27; fixtures, \$767.28; cash in bank, \$1,249.26; and the association might well congratulate itself on the results accomplished, and the prosperous future apparently before it.

PART II.

PROFIT SHARING.



PART II.

PROFIT SHARING.

The term profit sharing may be applied to any arrangement whereby labor is rewarded in addition to its wages or, in lieu of wages, by participation in the profits of the business in which it is employed. Benefits of various kinds, as insurance, schools, libraries, and beautiful surroundings, so far as maintained by employers out of their profits and enjoyed by employes as an addition to what their wages would purchase, would have to be regarded, in a strict analysis, as an indirect form of profit sharing. A sliding scale of wages, if adjusted to fluctuations of profit instead of to the changing market prices of the goods produced, would be a very direct and simple form of profit sharing. Whenever workmen own shares in the capital of the business that employs them they thereby, of course, participate, as capitalists, in its profits, and if in consequence of this arrangement the dividend is increased by the increased efficiency of the stock-owning workmen, the increment of increase that goes to those workmen is a reward of labor rather than of capital, and, therefore, a true case of profit sharing.

Usually, however, the term is understood to mean either a direct participation in profits in lieu of stipulated wages, or a bonus paid out of profits to labor in addition to customary wages. To these we add participation through a stock-owning by the employed workmen that is expressly contemplated and **provided for** in the constitution of a corporation. These three

forms of profit sharing and their combinations constitute the subject of the present investigation.

PROFIT SHARING IN EUROPE.

A direct allotment of a share of profits is one of the most ancient methods of rewarding labor. If not actually older than the wages system it was at least widely prevalent before money wages were commonly paid. In agriculture it is seen in the metayer system of continental Europe, to which "farming on shares" in New England corresponds. In the fishing industry, where the system seems to be peculiarly applicable, the pay of the crew is almost universally in proportion to the catch. On the economic and social effects of share farming the judgments of competent observers have differed widely. Adam Smith thought that it could never be the interest of metayers to lay out any part of their own savings on the further improvement of the land, and McCulloch wrote that wherever the metayer system had been adopted it had "put a stop to all improvement" and "reduced the cultivators to the most abject poverty." Châteaueux,* on the other hand, recording his observations in Italy, said: "It establishes a community of interests, and relations of kindness between the proprietors and the metayers: a kindness which I have often witnessed, and from which result great advantages in the moral condition of society." Sismondi,† whose opportunities for observation were superior to those enjoyed by any other writer that has treated this subject, gives emphatic testimony in favor of the system, as conducive to prosperity, moral order, and content. We find no record of any successful application, on a large scale, to manufacturing, of profit sharing as a substitute for wages. In some of the slate quarries of North Wales it has been customary for the more experienced quarrymen to form partnerships in twos or threes and contract to take out so many slates at so much per thousand. They have by this means made considerably more than the average of current wages for such work.‡

* Quoted by J. S. Mill: "Political Economy."

† Ibid.

‡ "Co-operation in the Slate Quarries of North Wales," by J. E. Cairnes. Essays, London, 1873.

Profit sharing in addition to wages is a modern experiment which began in the second quarter of the present century almost simultaneously in Ireland, France, and Germany. The earliest attempt in this direction which is recorded by Mr. Sedley Taylor, from whose work on "Profit Sharing"* we gather most of what follows on profit sharing in France and England, was made in 1831 by Mr. John S. Vandeleur, a disciple of Robert Owen, on an estate in the county of Clare, Ireland. By the agreement entered into with his laborers, who were formed into an association, Mr. Vandeleur furnished land, buildings, implements, stock, and stores, and the laborers received wages at ordinary rates. The association turned over to the proprietor produce to the estimated value of £900 as rent and interest. All remaining profits went to the association to be used in purchasing the live stock from Mr. Vandeleur and for other objects advantageous to the association as a body. The experiment was successful in stimulating the interest of the laborers, to the great improvement of the estate and of their condition, but it came to a summary end through Mr. Vandeleur's unfortunate passion for gambling, by which he lost his entire property. Edme-Jean Leclair, the Parisian house painter, to whom undoubtedly belongs the honor of having done more than any other one man to work out the details and demonstrate the practical merits of industrial partnership, made his first division with forty-four of his workmen in 1842. The Paris and Orleans railway company began sharing profits with its employés in 1844, and in 1847 Herr J. H. von Thünen introduced the system on his estate near Teterow, in Mecklenburg-Schwerin, where his son and grandson, succeeding in turn to the proprietorship, have continued it in force. From these beginnings the application of the system has been extended until now Mr. Taylor estimates that there are more than one hundred continental firms working on the participatory basis, and in France the policy of requiring profit sharing of all parties taking contracts for municipal work, and of all individuals and associations enjoying special rights and privileges from the State, has become a political question.

There are several ways of apportioning and applying the

* "Profit Sharing between Capital and Labor," London, 1884.

dividend to labor. The Paris and Orleans railway company has tried nearly all of them. The plan first adopted in 1844 provided for a distribution of fifteen per cent of the annual net profits remaining after a dividend of eight per cent had been paid on share capital. The employés were divided into three classes: the first was composed of directors and engineers, each of whom was to receive for every one thousand francs of his annual salary one three-hundredth part of the distributable amount; the second included heads of departments and superior employés, each of whom was to draw for every thousand francs of salary one five-hundredth part of the distributable amount; the third class, composed of remaining employés working through the year, was to receive what remained. Members of the first class were to receive their respective sums in cash. The share of each member of the second class was to be divided into two equal parts: one to be paid over in ready money, the other to be invested for his benefit in a state security and not withdrawable or assignable without the consent of the company. Of the sum falling to the third class, one-half was to go in rewards for distinguished services, to be paid in cash, and the other half was to be divided in proportion to wages and be compulsorily invested. The application of this complex scheme in 1846 gave to members of the third class so small a share that in 1847 the proportions were so altered that the first class received 56.6 per cent on salaries, the second class 37.8 per cent, and the third class 18.9 per cent. The revolution of 1848, with its cry of equality, broke down the division into classes. The minister of public works decreed that thenceforth each individual's share should be in proportion to his salary. In consequence of this arbitrary enactment the company thought seriously of abandoning participation altogether. In 1850, however, the directors abolished the classes and arranged for a uniform distribution of the bonus in three parts: one-third to be paid over in cash, one-third to be invested in the savings bank, and the remaining one-third to be paid into the State Pension office, or other insurance office, to create for each employé a life annuity to begin at the age of fifty. After the fusion with the Paris and Orleans in 1852 of three other railway companies, the profits were so large that the dividend to employés amounted to 34 per cent on wages in 1852

and to 41 per cent in 1853. Not having purposed to be quite so liberal, the company voted in the latter year that when the year's operations yielded the shareholders a total dividend not exceeding 15 per cent, the dividend to labor should be 15 per cent of net profits in excess of eight per cent on capital; when the total dividend to capital exceeded 15 per cent, the dividend to labor should be only 10 per cent of the profits in excess of 15 per cent on capital, and when the dividend to capital was in excess of 16 per cent, the dividend to labor should be only five per cent of the profits in excess of 16 per cent on capital. In 1854 a new regulation was adopted setting aside ten per cent of the dividend to labor for a fund, not to exceed 250,000 francs, to provide aid in cases of accident, injury and infirmity, help to widows, and prizes for distinguished services. In 1863 the whole plan was again recast. The share of each employé up to ten per cent on his year's wages was to be paid into the State Pension office; from the remainder, if any, a sum not exceeding seven per cent on his year's wages was to be paid to him in cash; and if there was still a residue it was to be paid to his savings bank account. As the result of this last arrangement the cash dividend dwindled until, in 1870, it disappeared. The dividend to employés amounted in 1844 to 6.81 per cent on the total wages of the year, and in 1853 to 40.96 per cent. From the latter date the percentage of dividend of wages steadily diminished until, in 1880, it was only 9.05. In 1882 it was 10 per cent. The number of participants was 719 in 1844 and 16,935 in 1882. The entire sum paid out in dividends to employés in these 39 years was 65,152,793 francs.

The Compagnie d'Assurances Générales of Paris allots five per cent of its annual profits to its 250 employés of all grades, but, instead of paying over any part of the bonus in cash dividends, capitalizes the amount each year at four per cent compound interest. When the beneficiary has worked for the company 25 years, or is 65 years of age, he may take a life annuity or invest his accumulated profits in French government or railway securities. If he chooses the latter he draws the dividends but the company retains the share certificates until his death, when his heirs receive the principal. The company

urges in favor of this plan that it secures exceptional permanence and steadiness in its staff.

M. Bord of Paris, employing about 400 workmen in the manufacture of pianofortes, began in 1865 to divide profits with them on the simplest plan of cash dividends. After paying himself 10 per cent on his capital he divided remaining net profits into two parts, taking one himself and apportioning the other among the workmen who had been six months in his service. The dividend to labor ranged from 9.40 per cent on wages in 1866 to 22 per cent in 1875. Nine or ten years ago M. Bord surrendered to his workmen the entire profits of the business in excess of five per cent interest on his capital. Their dividend in 1882 was 20 per cent on wages and amounted to 131,270 francs.

The majority of profit sharing establishments combine cash dividends with some form of deferred participation. A good example is the Paris printing, publishing, and bookselling house of M. Chaix, which assigns 15 per cent of its annual net profits to its employés. One-third of this sum is paid over in cash; two-thirds are turned into a savings fund on which the house pays four per cent interest. One-half of the capital thus accumulated may be drawn by the employé in whose name it stands when he has worked for the house twenty years continuously, or when he is 60 years old, or when for any reason he leaves its employment; the other half can be claimed only on retirement after completion of the full term of years or service. Participation is conditional. The employé must make written application, and show that he has been in the service of the house for three years and have given evidence of competence and zeal.

Still another plan is that adopted by Billon et Isaac, a joint stock company manufacturing mechanism of music boxes, at St. Jean, near Geneva. After deducting interest on capital and payments to reserve and maintenance funds, the net profits are divided into two equal parts, one of which is assigned to the shareholders and the other to the workmen. One-half of the latter sum is distributed in cash dividends proportional to wages, and the remaining half is invested for the beneficiaries in twenty-dollar shares of the company, which shares carry votes in the stockholders' meetings.

This last feature brings us back to the Maison Leclaire, the most highly organized, as it is the oldest existing industrial partnership. During the six years from 1842 to 1847 inclusive, the method of profit sharing followed by Leclaire was that of a simple cash dividend apportioned on the basis of wages. During these years an average of 18,915 francs was annually divided among an average of 80 persons. In 1860 a mutual aid society, which had been supported by monthly subscriptions from its members, was incorporated and made a perpetual silent partner in the firm of Leclaire and company, and in 1869 the entire business was incorporated with formal provisions that thenceforth the profits should be divided in certain fixed proportions between the managing partners, the mutual aid society, and the workmen forming the regular staff of the house. The capital is 403,520 francs, one-half being the property of two managing partners, the other half being held by the aid society. The managing partners receive each an annual salary of 6,053 francs. Five per cent interest is paid to them and the aid society on their respective capitals. Of the remaining net profit one quarter is paid to the managing partners, one quarter to the funds of the society, and the remaining half is divided among all the employés of the house in proportion to wages earned. Of this whole body of employés a certain number, at present about one hundred and twenty-five men, of unexceptionable moral conduct and of first-rate ability, constitute the *noyau*, or core of the establishment. The *noyau* elects the *comité de conciliation*, which is for most purposes the governing body of the house. It consists of five workmen and three clerks, with the managing partners as ex-officio chairmen. The *comité de conciliation* examines candidates for admission to the *noyau* and elects annually the foremen of departments from a list proposed by the managing partners. When a managing partner dies or retires the *comité* nominates a successor to be elected by the *noyau*; and to make possible the election of the best qualified man, irrespective of his pecuniary circumstances, it is provided that the capital of the outgoing partner shall not be withdrawn without consent until it is replaced from the sum accruing to his successor from the latter's share in the profits. Membership in the *noyau*, five years' connection with the house, good

conduct, and freedom from chronic disease are the conditions of membership in the mutual aid society. The administration of the latter is committed to a *conseil de famille*, consisting of a president, six officers annually elected, and twelve visitors chosen by turns. The visitors are charged with special duties of brotherly kindness toward members that are in sickness or any kind of distress. Besides conferring the ordinary advantages of a benefit club, membership in the society bestows a retiring life pension of 1,210 francs at the age of 50 years and the completion of 20 years of service for the house, and the payment of half of this annuity to the widow of such pensioner during her life. The member's life is also insured for 1,009 francs, payable to his family at his death. In September, 1883, the society possessed a capital of 1,565,557 francs. It had 105 members, besides fifty-one pensioners. The bonus paid to labor was fourteen per cent on wages in 1870 and twenty-two per cent in 1882, having increased year by year, except during the war years beginning with 1871 when it did not fall below twelve per cent. The number of participants in 1882 was 998; the total wages, 1,079,391 francs. The total of bonuses from 1842 to 1883, including the sums paid to the mutual aid society, was 3,355,395 francs. The moral and economic results of these arrangements and participation have been most remarkable. Leclaire always maintained that he had accumulated a larger private fortune than he could have done by a selfish policy. At his death, in 1872, he left a property of 1,210,560 francs.

The members of M. Godin's Familistère, at Guise, have been organized as an industrial partnership since 1880. The organization is complex, resembling, in many ways, that of Leclaire and company. Labor is paid its wages and capital a rate of interest, after which capital and labor as represented in wages share proportionately in profits, a thousand francs of wages receiving the same profit as a thousand francs of capital; and as wages amount to 1,888,000 francs a year, while interest on capital is only 230,000 francs, the participation of labor is eight times that of capital. The allotment is such that 25 per cent of profits goes to administrative talent. A part of the dividend to labor is converted into certificates of stock, so that in time the workers will own the entire plant. Already their capital

is 1,969,000 francs and their profits since 1880 have amounted to 3,781,000 francs.*

Four cases of participation in manufacturing industry in Italy are mentioned by Dr. Ugo Rabbeno, in his account of co-operation in that country,† but only two of them are industrial partnerships. One of these, the china works of the Richard Society, assigns to its best workmen five per cent of annual profits, and has established a mutual aid society, a pension fund, and a school. The other is the woollen factory of Senator Alessandro Rossi which devotes five per cent of profits to support a *crèche* and a school for workers.

The most extensive English experiment in industrial partnership was made by Archibald and Henry C. Briggs, at the Whitwood collieries in Yorkshire, from 1865 to 1874. During the ten years preceding there had been ten strikes lasting altogether seventy-eight weeks. The Messrs. Briggs, hoping to bring about a better order of things, organized as a joint stock company, permitting their operatives and customers to take one-third of the shares, and offered further to divide among their employes in proportion to wages one-half of net profits remaining after paying ten per cent on capital and making other usual reservations. The result of the first year's operations under this arrangement was a bonus of £1,800 to labor. In 1872 the bonus was £5,250. In that year a great "boom" in the coal trade commenced and the wages of the workmen were advanced $27\frac{1}{2}$ to 30 per cent and the initial rate of interest on capital was increased to 15 per cent. Notwithstanding these advances the dividend to labor amounted to £14,256. But in 1874 a reaction commenced and prices fell off. The dividend to labor that year was only £6,048, and it became necessary to reduce wages. Thereupon, at the dictation of the miner's union, the men joined in a strike, as a result of which profit sharing was discontinued.

Among the European firms and corporations that have most thoroughly and patiently tried industrial partnership there is unanimous agreement that it promotes zeal, efficiency, and

* "The Familistère at Guise, France," by Edward Howland. Harper's Magazine, November, 1885.

† "Co-operation in Italy," by Dr. Ugo Rabbeno. Translated by E. V. Neale. Co-operative Printing Society, Manchester.

economy, and thereby increases the profits of business; that it is a moral educator, and that it substitutes harmony and mutual goodwill for distrust and contention in the relations of employers and employed. Where it has failed, the failure has been due either to extrinsic causes or to a too hasty abandonment before the full educational result has been attained.

Profit sharing in connection with stock-owning by workmen has attained its largest development in England. Co-operative mills have existed there since 1825. Co-operative corn mills were started at Leeds and Halifax in 1847 and at Rochdale in 1850. Subsequently to the latter date very many mining and manufacturing enterprises have been undertaken by co-operative societies. Most of them have grown out of co-operative distribution, and the fundamental idea of co-operative distribution, that profits should be divided on the basis of purchases rather than on capital invested, is so strongly held that a number of co-operative manufacturing companies divide a portion of their profits with their customers. It is estimated that 10,000 operatives are stock owners in the Oldham spinning mills. Most of these prefer to hold shares of other mills than those in which they work.*

PROFIT SHARING IN THE UNITED STATES.

In the consideration of profit sharing in the United States, this part of the subject has been subdivided, for the purpose of bringing together similar systems of profit sharing, as follows: profit sharing without wages, in the Massachusetts fisheries; profit sharing in addition to wages, in several states; and profit sharing through stock-owning, in Massachusetts.

PROFIT SHARING WITHOUT WAGES, IN THE MASSACHUSETTS FISHERIES.

Of participation in profits in lieu of stipulated wages we have in Massachusetts a familiar example in the coast fisheries. It is not customary in this business to pay any wages. The crews

* For a more detailed account of co-operative production, as distinguished from profit sharing, in England and upon the Continent of Europe, see Part I. of this Report, pages 49-154.

are rewarded for their labor in direct proportion to the value of the catch.

In cod fishing by hook and line the plan is carried out with extreme nicety ; each man keeps a separate account of the fish he takes and is paid accordingly.

Sometimes the men fish two by two in dories and the account of each dory is kept separately.

In mackerel and other seine fishing it is impossible to keep each man's account separately and all the members of the crew share in the profits equally.

At Gloucester the basis of profit sharing between owners and crew is as follows :

The owners furnish the vessel, with rigging, cables, etc., complete ; provisions for the trip, and the fishing gear.

When the vessel returns the catch is valued or immediately sold at the market price of that date.

From the gross value are deducted certain trip charges, such as expenses for towing, ice, and barrels. If the fish have to be packed and inspected, as sometimes in the case of mackerel, the cost is a trip charge.

Trip charges having been deducted the net value of the catch is divided : one-half to the owners, one-half to the crew.

The owners from their half pay the skipper a percentage.

From the crew's half are paid the wages of the cook, any incidental labor that the crew may have employed, the cost of medicine, and a small percentage to the widows' and orphans' fund.

The crew's net half is then divided among the men in proportion to their individual success, or by dories, or equally, according to the method of fishing.

In haddocking voyages in the winter another plan is adopted. The owners find the vessel. The crew find provisions, dories, and fishing gear and pay all expenses. The catch is sold for cash and the crew have three-fourths and the owners one-fourth of the gross proceeds. The owners pay the skipper.

Another way, once common at Provincetown and at Beverly, was to include stores, ice, bait, fishing gear, and some other expenses in gross charges called a "great general average," the crew then taking three-fifths and the owners two-fifths of

the catch. This plan is being abandoned for the half-and-half system.

Owners of vessels, and the fishermen, agree that the wages system would be impracticable in this business. The owners say: "We should get a lot of loafers and the business would go to ruin." The fishermen say: "We could not live on wages, for the active, skilful men would fare no better than the lazy; there would be no inducement to secure the largest possible catch, the business would become unprofitable, and wages too low to tempt first-class men."

The owners say further: "This system is strictly co-operative. When the men are not getting a good living the business (of the owners) is losing money terribly. It is noticeable that the poorest men are to be found in seining in which all share equally. In cod fishing the men make it hard for a fellow who does not earn his share of the expenses. It is this stimulus of profit sharing that has made our famous skippers."

A first-class man rises easily and naturally to command as a skipper. Once a skipper he may readily become a part owner of one or more vessels. Owners prefer to have skippers pecuniarily interested in the vessels under their charge. It is estimated that fully a quarter of the skippers of Gloucester have proprietary interests in the fleet.

The value of a vessel is from \$3,000 to \$12,000. The average value is about \$5,000.

The following table has been compiled from the books of one of the leading firms of Gloucester.* It gives the highest pay made by any one man, the lowest pay received by any one man, and the average pay of all the men in the crew, for each voyage of each vessel owned by the firm, in the year 1884. The date in each line is the date when accounts were made up after the vessel had come in and her catch had been sold or valued. The number of days occupied by the voyage does not appear in the book from which our statistics were taken, but inasmuch as the interval from a date when a crew's accounts are made up and the money paid until they are made up and paid again is for economic purposes the length of the intervening

* John Pew & Son, to whom, and to Mr. John K. Dustin, we are under special obligations for courtesies and information.

trip, we have so reckoned it and supplied the numbers for days so far as possible, and have called the dates, dates of return.

The lowest pay or share is sometimes that of a boy or green hand. The majority of shares approximate the average. A fair illustration is the distribution among the crew of the "Alice" for the voyage ending December 30, as follows, names being omitted: \$31.20; \$38.20; \$39.70; \$38.80; \$34.80; \$32.00; \$29.71; \$30.20; \$28.47; \$27.70; \$28.00; \$26.70; \$14.40; \$30.84, thirty dollars and eighty-four cents being called the average.

Where only the average share is given the crew were engaged in seine fishing, and the crew's half of the catch was equally divided.

The shorter cod fishing trips were to St. George's bay, the longer ones to the banks of Newfoundland.

The table shows:

The great and frequent fluctuations in the rewards of labor under this form of profit sharing in an uncertain business.

The perfect opportunity which this form of profit sharing affords to men of more than average industry and skill to benefit themselves proportionately.

Statistics of Profit Sharing, in the Massachusetts Fisheries.

NAME OF VESSEL.	Date of Return.	Number of Days since last Return.	Highest Pay.	Lowest Pay.	Average Pay.
	1884.				
Chocorua,	Jan. 2	-	\$65 03	\$29 35	\$36 87
Maggy and Lilly,	" 10	-	58 12	20 35	31 51
Anne D.,	" 23	-	17 28	73	6 50
Alice,	" 30	-	40 13	7 45	20 08
Chocorua,	Feb. 6	35	25 26	12 61	16 99
Maggy and Lilly,	" 7	28	55 62	4 43	-
Tidal Wave,	" 9	-	62 45	23 46	42 41
Pilgrim,	" 18	-	46 64	20 19	29 35
Anne D.,	" 25	33	52 26	6 45	28 04
Chocorua,	March 4	27	61 11	24 73	42 05
Tidal Wave,	" 7	27	15 97	1 61	6 20
Maggy and Lilly,	" 10	32	52 32	17 20	34 13
Sterling,	" 13	-	53 16	30 97	43 32
Alice,	" 14	44	48 26	22 26	34 86
Welcome,	" 14	-	47 50	14 94	30 96
Pilgrim,	" 20	31	67 44	37 14	48 15
Anne D.,	" 22	26	65 86	10 65	36 76
Maggy and Lilly,	" 26	16	66 87	6 46	49 77
Chocorua,	" 26	22	70 16	6 65	44 25
Tidal Wave,	April 5	29	56 46	32 50	42 16
Sterling,	" 7	25	42 97	20 83	35 00
Welcome,	" 9	26	50 66	11 88	32 83
Alice,	" 10	27	64 05	33 03	47 46
Ann Eliza,	" 14	-	41 40	9 72	20 86
Anne D.,	" 16	25	37 93	11 60	18 85
Pilgrim,	" 16	27	36 41	5 41	17 91

Statistics of Profit Sharing, in the Massachusetts Fisheries — Continued.

NAME OF VESSEL.	Date of Return.	Number of Days since last Return.	Highest Pay.	Lowest Pay.	Average Pay.
	1884.				
Dictator,	April 17	-	\$23 26	\$2 85	\$14 91
Shiloh,	" 18	-	48 94	26 90	42 90
Ella F. Bartlett,	" 23	-	17 74	3 14	8 30
Tidal Wave,	" 26	21	31 62	8 42	16 84
Alice,	" 28	18	17 25	2 03	10 41
Ontario,	May 3	-	27 42	21 79	24 89
Sunshine,	" 5	-	3 75	0 00*	57
Sterling,	" 7	30	20 75	3 40	10 04
Chocorua,	" 9	44	40 31	1 90	32 93
Ann Eliza,	" 10	26	18 11	5 08	12 18
Dictator,	" 16	29	28 23	6 58	18 37
Ella F. Bartlett,	" 17	24	20 47	2 29	9 75
Welcome,	" 17	38	21 62	5 56	15 25
Anne D.,	" 19	33	24 73	8 51	15 76
Eastern Queen,	" 19	-	-	-	34 48
Tidal Wave,	" 20	24	32 52	13 77	26 83
Pilgrim,	" 20	34	24 62	9 38	17 49
Sterling,	" 21	14	49 16	27 28	41 80
Alice,	" 23	25	16 47	6 33	11 57
Ann Eliza,	" 26	16	43 33	20 70	27 81
Chocorua,	" 28	19	37 51	16 11	26 35
Sunshine,	" 29	24	39 82	17 62	25 72
Maggy and Lilly,	" 31	66	-	-	29 20
Sterling,	June 5	15	20 04	10 89	15 20
Tidal Wave,	" 6	17	20 26	12 01	14 85
Anne D.,	" 6	18	29 20	10 13	21 14
Dictator,	" 6	21	14 94	5 28	14 99
Herald of the Morning,	" 9	-	-	-	41 77
Pilgrim,	" 9	20	38 31	11 30	20 22
Ann Eliza,	" 10	15	32 68	12 84	19 84
Welcome,	" 10	24	48 80	3 78	35 08
Chocorua,	" 13	16	12 56	1 33	7 65
Ella F. Bartlett,	" 13	27	17 58	5 61	12 73
Sunshine,	" 17	19	35 60	12 52	22 00
Alice,	" 18	26	50 23	35 03	41 17
Tidal Wave,	" 21	15	48 20	32 19	38 34
Dictator,	" 24	18	18 34	11 04	13 14
Pilgrim,	" 24	15	34 53	12 46	23 54
Ann Eliza,	" 25	15	43 21	23 66	30 87
Sterling,	" 26	21	26 40	11 55	21 04
Eastern Queen,	" 26	38	-	-	24 91
Welcome,	" 30	20	33 45	4 40	26 76
Anne D.,	July 1	25	27 70	16 31	21 33
Sunshine,	" 2	15	41 28	19 45	27 60
Ella F. Bartlett,	" 3	20	34 77	7 44	20 90
Chocorua,	" 3	20	18 36	6 43	11 01
Alice,	" 10	22	26 37	7 72	17 55
Tidal Wave,	" 12	21	41 32	22 88	31 91
Sterling,	" 14	18	34 93	18 07	25 78
Ann Eliza,	" 15	20	45 60	22 20	34 10
New England,	" 15	-	92 25	20 48	78 34
Pilgrim,	" 17	23	38 25	15 20	25 94
Sunshine,	" 18	16	43 54	20 54	27 97
Welcome,	" 18	18	37 02	11 26	30 50
Eastern Queen,	" 21	25	-	-	26 50
Dictator,	" 22	28	69 16	48 47	57 55
Anne D.,	" 23	22	15 14	7 14	10 22
Chocorua,	" 24	21	26 12	5 31	17 83
Shiloh,	" 25	98	127 83	105 31	115 84
Ella F. Bartlett,	" 25	22	18 90	2 91	11 11
Sterling,	" 29	15	13 00	4 94	8 55
Ann Eliza,	" 29	14	16 01	7 80	11 46
Alice,	" 31	21	19 11	8 36	11 03
Ontario,	Aug. 1	90	157 49	97 99	131 16
Tidal Wave,	" 2	21	20 31	9 48	15 14
Welcome,	" 4	17	19 84	5 80	14 45
Sunshine,	" 6	19	38 78	11 23	23 19
Pilgrim,	" 9	23	35 77	8 67	28 00
Dictator,	" 9	18	17 36	6 34	13 45
Eastern Queen,	" 11	21	-	-	32 59
Chocorua,	" 12	19	13 54	1 12	4 05
Ann Eliza,	" 12	14	10 07	1 62	3 77
Sterling,	" 18	20	49 07	19 34	27 19

* The poorest hands received nothing at all.

Statistics of Profit Sharing, in the Massachusetts Fisheries — Concluded.

NAME OF VESSEL.	Date of Return.	Number of Days since last Return.	Highest Pay.	Lowest Pay.	Average Pay.
1884.					
Anne D.,	Aug. 18	26	\$41 08	\$18 13	\$25 83
Maggy and Lilly,	" 18	79	-	-	1 52
Ella F. Bartlett,	" 21	27	21 88	3 68	12 46
Alice,	" 22	22	33 77	11 33	22 72
Sunshine,	" 23	17	17 57	1 80	11 02
Tidal Wave,	" 25	23	41 40	24 80	32 09
Welcome,	" 26	22	43 45	24 63	32 22
Chocorua,	" 30	18	55 73	19 17	26 99
Pilgrim,	Sept. 1	23	29 70	11 91	22 24
New England,	" 4	51	80 10	55 70	66 21
Dictator,	" 5	27	44 58	33 86	38 57
Herald of the Morning,	" 9	92	-	-	58 11
Sterling,	" 11	24	19 07	8 37	12 82
Maggy and Lilly,	" 13	26	-	-	25 22
Ella F. Bartlett,	" 13	23	30 01	9 31	21 81
Sunshine,	" 15	23	46 41	20 11	30 84
Anne D.,	" 16	29	39 40	20 55	28 30
Eastern Queen,	" 17	37	-	-	45 76
Tidal Wave,	" 17	23	24 72	14 12	17 10
Welcome,	" 18	23	35 78	6 28	29 07
Alice,	" 19	28	49 81	30 71	37 56
Chocorua,	" 19	20	32 45	11 50	19 91
Concord,	" 26	-	-	-	221 49
Herald of the Morning,	Oct. 1	22	-	-	24 06
Pilgrim,	" 3	32	55 31	31 66	41 46
Shiloh,	" 3	70	147 07	86 82	121 70
Sterling,	" 4	23	40 34	23 84	33 48
Ella F. Bartlett,	" 4	21	26 92	10 16	20 28
Tidal Wave,	" 6	19	30 40	9 40	21 66
Dictator,	" 7	32	46 24	29 89	40 20
Sunshine,	" 7	22	24 75	8 25	19 30
Anne D.,	" 10	24	39 27	12 71	23 62
Maggy and Lilly,	" 14	31	-	-	22 90
Chocorua,	" 14	25	36 00	10 80	21 02
Ontario,	" 16	76	124 13	46 31	47 54
Welcome,	" 20	32	3 35	19 40	15 52
Alice,	" 22	33	18 80	4 60	12 32
Tidal Wave,	" 24	18	6 02	1 12	3 52
Sterling,	" 28	24	37 58	18 91	27 25
Ella F. Bartlett,	" 28	24	21 17	12 22	18 98
Dictator,	" 27	20	12 91	6 47	10 35
Sunshine,	" 30	23	15 61	6 26	11 00
Pilgrim,	Nov. 7	35	27 18	18 33	24 80
Welcome,	" 11	22	6 68	57	2 60
Anne D.,	" 14	35	7 30	23	2 73
Maggy and Lilly,	" 14	31	-	-	25 36
Herald of the Morning,	" 17	47	-	-	22 83
Chocorua,	" 18	35	5 64	87	2 00
Tidal Wave,	" 22	29	19 94	9 84	13 27
Alice,	" 22	31	22 72	5 97	15 87
Sterling,	" 26	29	47 39	22 19	36 29
Dictator,	Dec. 2	36	33 08	9 55	24 37
Pilgrim,	" 16	39	41 87	30 00	33 33
Alice,	" 30	38	39 70	14 40	30 84

PROFIT SHARING IN ADDITION TO WAGES, IN SEVERAL STATES.

Profit sharing in addition to wages, which is the form of profit sharing usually referred to when the term "industrial partnership" is used, is not as yet extensively established in the United States. We have no examples of it comparable to the Maison Leclair and the Paris and Orleans railway company, nor any such number on any scale as can be found in France. The examples that we have are none the less well worthy of study,

for they are beyond a doubt the forerunners of a further, and perhaps extensive, development in this direction. The following account does not profess to be exhaustive. The experiments described are representative rather, and have been selected with reference to the variety of conditions and methods which they present.

A. S. Cameron & Co.

A. S. Cameron & Co., manufacturers of steam pumping machinery in New York city, began to divide profits with their employes in July, 1869, and continued the practice with marked success for eight years. It came to an end by Mr. Cameron's death in 1877.

The plan adopted was explained to the men in the following circular :

“ To assist a person in improving his condition by his own efforts is to make a man of him.

“ To advance a person independent of his own efforts is to make a beggar of him.

“ Our aim is to give each of our employes an opportunity to advance himself.

“ We have adopted the system of co-operation as a practical business movement, and not as a charitable one.

“ The following regulations will explain the way we have undertaken to carry this out :

“ OFFICE OF A. S. CAMERON & Co.,
NEW YORK, July 12th, 1869.

“ The books of this concern are balanced on the first day of July each year. On the fifteenth day of July, 1870, we will distribute among the workmen, then in our employment, ten per cent of the net profits accruing from our business during the year commencing July first, 1869, and ending July first, 1870; divided in proportion to the amount of wages received by each man during the year.

“ Provided, that our employes perform the duties assigned to them in such a manner as to warrant us in pursuing this course, of which we are to be the sole judges. This act being entirely voluntary on our part, we convey to our employes no right or title to such distribution of profits — their weekly wages being in full compensation of services performed.

“ Each person in our employment has thus an opportunity of sharing in the profits of the concern in proportion to the amount of work performed by him.

“ What we expect in return is that each person will work as though the establishment belonged to himself, and see that each of his fellows does the same — saving every minute of time, and every speck of property.

“ We most earnestly desire that all lazy persons shall be pointed out to us for prompt dismissal, so that those who work hard and honestly to advance their interests will not be called upon at the end of the year to divide the fruits of their industry with the sluggards.

“ A. S. CAMERON & CO.

“ NOTE:— This proposition to divide among you ten per cent of our profits realized from the manufacture of machinery, — for which there is a great demand at all times, and at all seasons — which is protected by a number of valuable patents, being in addition to your weekly wages, which are at least as liberal as you could secure in similar employment elsewhere, entitles us to expect that you will put forth all your efforts, in order to realize its benefits.

“ Bear in mind, however, that a distribution of profits will only be made on condition that your increased efforts entitle you to it.

“ Should the rule operate to our advantage in relieving us from following up the leaks and the loafers, we will continue it; not otherwise.

“ If we derive benefit from the system, we can secure its adoption in other establishments; but if you do not appreciate the offer, we will consider you untrue to yourselves, to your families, and to your fellow workmen at large, and will take pains to make the fact known.

“ What we expect in return is, that you will work earnestly and faithfully, and see that neither time nor material is wasted; that you will point out to us any labor saving item, or other source of economy that may suggest itself to you.

“ And, above all, we expect that those who do not enter into the spirit of this matter will be pointed out to us for prompt dismissal.

“ A. S. CAMERON & CO.”

The bonus was four and one-half per cent on wages each year and did not operate to reduce wages; on the contrary they were several times increased.

It had a salutary effect on the men, morally as well as economically, and presumably upon the business success of the firm. An employé said to us: “ Mr. Cameron was a very shrewd business man and would not have continued profit sharing if it had not been a business success. He had the perfect confidence and respect of his men.”

During the great strike of 1871 Mr. Cameron was chairman of the executive committee of the employers. The strike was for eight hours' work with ten hours' pay. Some of the men in

the foundry went out at the order of their trade union. But Mr. Cameron's influence and their respect for him quickly prevailed and they returned to ten hours' work.

Most of the men were of German and Irish nationality.

There was a sick fund to which each man contributed five cents a week and Mr. Cameron an amount equal to their aggregate contribution.

Mr. Cameron encouraged home owning and sometimes loaned money to his men with which to build houses. He had not established any pensions for superannuated employes.

In the room that was Mr. Cameron's private office hang the following resolutions :

"At a meeting of the employes of A. S. Cameron & Co., held at the works, on Wednesday, July nineteenth, 1871, the following preamble and resolutions were unanimously adopted :

"*Whereas*, We are desirous of testifying to the esteem with which we regard Mr. A. S. Cameron: Be it therefore

"*Resolved*, That we hereby express our most sincere thanks to our worthy employer for his courteous, liberal and impartial conduct towards his employes, securing our unqualified esteem in the present and most fervent wishes of success in the future.

"*Resolved*, That we endeavor to deserve his good will and opinion by a careful discharge of our duties and a firm determination to persevere in industry, integrity and sobriety in accordance with his expressed wishes.

"*Resolved*, That we recognize in the co-operative system by him introduced into his establishment a liberal movement in the right direction and that our thanks are due to him in an especial manner for the same.

"That a copy of the foregoing preamble and resolutions be suitably engrossed, framed and presented to him as an additional evidence of our sincere esteem and regards.

"ALEXANDER MACDOTT.
JAMES COTTER.
STEPHEN GARRIGUS.
GEORGE SMITH.
FERDINAND O'HAGAN.
JOSEPH A. KINNEY."

Brewster & Co.

An industrial partnership which gave to employes an important share in framing the regulations and controlling the conditions under which they worked, as well as participation in profits, was formed at the close of the year 1869 by Brewster & Co., carriage builders, at New York, and dissolved in June, 1872, by the workmen joining the eight-hour strike.

The dividend to labor was ten per cent of the firm's gross profits, there being no deduction first of any salary or interest on capital for any member of the firm. It was divided in proportion to wages, every employé receiving a share unless he voluntarily left the establishment before the close of the fiscal year. An employé discharged received a share if the wages he had earned amounted to \$100. A relief fund, also, was maintained from the profits of the business.

That this plan of participation might have the full benefit of the judgment and skill of every person interested in its success, and that all might share in the responsibilities of management, the employés were organized as an industrial association. The employés were divided into seven departments, corresponding to their work. Each department elected a board of control and the chairmen of the several boards of control, with a representative of the shop at large, constituted a board of governors. The board of governors elected a president of the association from among the members of the firm of Brewster & Co. The board of governors had power to make all rules and regulations for the shop and to hear and investigate complaints. Every resolution or measure of any kind which the board adopted, before it became binding upon the association, was presented to the president. If he approved he signed it, and if not he returned it with his objections in writing, or with a verbal statement, to the board at the next monthly meeting, when it was reconsidered. If then two-thirds of all members of the board voted by yeas and nays (each man's vote being recorded in the journal) to pass the measure it became binding, notwithstanding the objections of the president. The boards of control of the several departments enforced the regulations made by the board of governors. Their duties included the care and custody of the property of their departments, watchfulness that nothing was destroyed or wasted, the settlement of all minor questions, and the exercise of any other powers delegated to them. Neither the association nor any member of it other than the president had any voice in the management of the firm's business, nor the right to bring suit against Brewster & Co. to recover any share in the dividend to labor, which, it was expressly understood, was a voluntary concession. The association could be dissolved within thirty days after the close of

a fiscal year, either by Brewster & Co., or by a two-thirds vote of the members.

This arrangement, during the two years and a half of its continuance, gave entire satisfaction and the excited action of the employés by which it was terminated was one of the strangest freaks of epidemic excitement on record. By the constitution of their association they had it in their own power, through their board of governors, to make eight hours a working day, which was the object of the general strike in which they joined. They seemed to have been literally crazed by the popular turmoil. They forfeited a dividend of \$11,000, which would have been due a month later, besides losing \$8,000 in wages, and at the end of two weeks went back to work on the old plan of simple wages without a single concession on the part of Brewster & Co.

A Mercantile Experiment.

The most extensive trial of profit sharing by bonus ever made in Massachusetts was begun about ten years ago, and continued for several years, by a mercantile firm having several hundred employés.

The only information regarding it which the firm is willing to make public is the following general statement :

They set aside yearly a certain fixed percentage of the profits of the business and called it the employés' bonus.

This sum was divided as a percentage on salaries among employés, of all grades, that had been in the firm's employ for a certain length of time.

The employés were never told at any time that a division of profits might be expected, or that the continuation of the practice would depend upon the observance by them of any conditions.

It was discontinued because among so many employés there were too many who showed no appreciation of its benefits and made no return in increased fidelity or efficiency.

It was thought better, therefore, to devote the sum set aside for bonus to increasing the salaries of individuals who had demonstrated the superior value of their services.

The firm, nevertheless, believe in the principle of profit

sharing and have on several occasions advised other parties, somewhat differently circumstanced from themselves, to try it.

The Peace Dale Manufacturing Company.

An extensive experiment in profit sharing with employé's owning no stock in the corporation was commenced by the Peace Dale Manufacturing Company, at Peace Dale, R. I., in 1878. It has been a gratifying success and is still continued.

This company, which has an interesting and honorable history, manufactures shawls, worsted coatings, cassimeres, and other woollen fabrics. It has a capital stock of \$200,000, and employs about 450 persons. Peace Dale is a village of 1,200 inhabitants in the town of South Kingston, about 30 miles southwest of Providence, and it was here that power looms were first successfully operated in America. Rowland Hazard began here to manufacture linsey-woolseys about the beginning of this century, all the operations of carding, spinning, and weaving, both of the cotton wool and the woollen filling, being carried on by hand. A set of carding machines started in the village about 1804 was soon after purchased by Mr. Hazard. The power looms invented about 1812 by Thomas R. Williams, after being thoroughly tested, were bought by Mr. Hazard in 1814 or 1815, two years, at least, before power looms were started at North Providence in Judge Lyman's mill, which some writers have claimed was the first to use them. In 1819 Isaac P. Hazard and Rowland G. Hazard, sons of Rowland Hazard, succeeded to the management of the business and in 1820 they started a spinning jack of 52 spindles. Power looms for wide goods were introduced in 1828. In 1847 a mill was erected for working fine wool, and a year later the business was reorganized as a corporation under its present title, with Isaac P. Hazard as president and Rowland G. Hazard as treasurer. The manufacture of shawls was commenced in 1849. Isaac P. Hazard retired in 1864 and Rowland G. Hazard in 1866, the latter leaving the management of the business to his sons, Rowland Hazard, treasurer, and John N. Hazard, president. A son of Rowland Hazard, R. G. Hazard, 2nd, is now assistant treasurer, representing the fourth generation of the family in the conduct of the business. The works

were greatly enlarged in 1856, and in 1872 a new mill was erected for the manufacture of worsted goods.

The company's 450 employés are Americans, English, Irish, Swedes, and Germans. Two-thirds of them are foreign; the majority being Irish. Two-fifths of them are women.

Profit sharing was the suggestion of Rowland G. Hazard, the father of the present treasurer. It grew out of a wish to do a good thing for the workpeople and a desire to have them do their better part by the company. So far as it would affect the company it was not expected to make money in the positive sense, but to save waste. Various methods were considered, among them the plan of minority shareholding by employés. This was decided against as impracticable. One strong objection to it in the minds of the company being an unwillingness to give any employé any other claim to retention in employment than his record of efficient service. It was to be a purely voluntary action by the company. They decided that it would be best to hold out no other promise or expectation than that they would divide profits with labor when it should seem to themselves expedient to do so, and on such terms as they should themselves from time to time determine.

The plan was announced and explained to the employés in the following circular, dated January 1, 1878:

“For some years past the subject of co-operation has been attentively considered by the members of the Peace Dale Manufacturing Company. The great depression which has, during that time, existed in the shawl trade has prevented the adoption of any special plan. It would have been useless to offer co-operation to laborers when there was prospect of loss instead of profit. Just here observe that labor cannot run the risk of loss. It must have its daily wages guaranteed. This is the real difficulty in making any plan for co-operation. If capital must pay the current wages, and run the risk of loss, the argument seems sound that it should have the advantage of corresponding gain. However just the principle, there has been developed in practice, particularly in Europe, a tendency to bring labor and capital into antagonistic relations. This is a false position. Capital and labor are *inter-dependent*. Their interests are identical. Neither is of value without the other, and only when they work together in harmony are the best results attainable. In view of these facts several systems of co-operation have been

devised, by which the laborer may obtain a larger share of the product of his labor than usually falls to his lot. The only one which seems to be applicable to the circumstances of the case of the Peace Dale Manufacturing Company is that which the company has adopted as follows :

“The Peace Dale Manufacturing Company proposes, in each year in which there are surplus profits, to divide a sum among all its employés. which sum shall depend upon the results of the year's business. This sum cannot under ordinary circumstances be very large. Before anything can be set apart for it, wages must be paid, interest must be paid, and profit on capital must be paid. Then an amount must be set aside to make good wear and tear of buildings, to replace worn out machinery, and to strengthen the reserve funds, that the company may be able to pass through a year, or a series of years, of depression. The importance of this last is seen in the experience of the past five years, when but for the existence of such reserve funds the mills would have been obliged to stop. Out of what is left after all these things are provided for, the bonus for labor must be taken.

“Under present conditions the items before mentioned, on the average, absorb nearly all the profits, leaving little or nothing out of which to pay this proposed bonus ; whatever is left will, however, feel the full effect of any extra care and attention on the part of the employés. If they prevent waste of material, if they save the wear and tear of machines, if they are diligent so that a large amount of work is performed, the sum out of which the bonus is to be paid will be enlarged. Indeed, in proposing this bonus the Peace Dale Manufacturing Company confidently expects that the increased care and diligence which it will thus be the direct interest of each employé to exercise will result in a saving which will go far toward providing the means of payment.

“The mode of distributing this bonus will be by making a dividend of so much per cent upon the amount of wages earned during the year by the persons entitled to receive the bonus. This percentage will be fixed by the directors of the Peace Dale Manufacturing Company, in view of the year's results, and if in their judgment, after providing for all other contingencies, there is not enough left to make a dividend of one per cent, no dividend will be made for that year.

“In case of a dividend it will be paid on and after the twentieth day of March in each year, to all employés who were in the employ of the Peace Dale Manufacturing Company during the preceding month of January, and who were in said employ for at least seven

months out of the twelve next preceding the first day of February. The amount of wages earned by each employé during the twelve months next preceding the first day of February shall be taken (to the nearest whole dollar) as the amount upon which the percentage is to be calculated to ascertain the amount of dividend to be paid each said employé

“Employés who have been discharged for cause, who have not worked at least seven months during the year ending January 31st, or who have voluntarily left the employ of the Peace Dale Manufacturing Company previous to that date, will not be entitled to any dividend. This plan of co-operation is adopted as an experiment only. If after trial it fails to accomplish the ends proposed, among which greater neatness, care and attention in all departments of the works are especially desirable, it will be abandoned. The Peace Dale Manufacturing Company expressly reserves to itself the right to modify or discontinue the plan, whenever it shall deem proper; but it also expresses the hope that its continued working will be productive of only good results.”

This circular explains with admirable clearness the theory of profit sharing and the conditions on which the amount of the bonus necessarily depends. The bonus is not a gift, it is not taken from the employer's share of the product to be added to that of the employé; it is paid out of additional wealth created by increased fidelity, diligence, saving, and a more perfect co-operation between labor and management. The results of the Peace Dale experiment are set forth in successive annual circulars. The end of the first year brought no dividend to labor. The company announced the result with regret and asked the hearty co-operation of all their employés in their efforts to bring about a different result for the following year.

The second year a bonus of \$5,842.40 was distributed as a five per cent dividend on wages. The company announced that the plan of co-operation had produced some good results, and that while as yet the experiment could hardly be said to be an entire success it seemed to warrant a further trial. Especial attention was called to the fact that the company was paying the full rate of wages and that whatever was paid out in bonus was over and above that rate, and that the full measure of honest service was necessary to provide the fund out of which the bonus to labor could be paid and its amount be increased.

In 1881 a bonus of \$5,999.65 was announced. The circular said :

“The satisfaction with which we announce this result is marred by the fact that the profits have been derived more from the purchase of materials at low prices than from economy in manufacture. So far, the result of the co-operative experiment has not been all that we had a right to expect. The direct incentive which it supplies to prevent waste and promote careful and diligent habits does not seem to be sufficient. Were it not that some departments do show a most praiseworthy attention to neatness, order, and minor details, we should be tempted to inquire if the sum paid out as a bonus is not thrown away. It is in excess of regular wages, and can only be justified by increase of diligence and care on the part of those employed. . . . We hope the end of this year will not leave us so uncertain of good results as we now are. What we most desire to see is that spirit of kindly confidence which shall make every one employed in the Peace Dale mills feel that the interest of the establishment is his own interest.”

In the fourth year labor secured a dividend of only three per cent, the high price of wool having cut down profits. The amount of the bonus was \$3,760.14. “We are encouraged to make this dividend,” the company explained, “by the fact that we believe we can see an increase of care and diligence. As yet this increase is not as great as it should be, but the object to be attained in preventing waste and in encouraging conscientious work is so important to the moral as well as to the material good of the community that we decide to persevere. The experiment we are trying is only co-operative in the sense that we are *working with* those whom we employ in an effort to develop thrift and industry. We appeal to all to aid in this work. The greater the care and diligence the greater the fund from which we can pay the dividend to labor. The right basis will be reached when every employé will see that when he makes a needless waste he himself suffers a loss as well as causes one.”

In 1883 the bonus was again three per cent and the amount \$3,760.35. The circular congratulates the employés on a better understanding of profit sharing and increasing attention to minor details :

“Every weaver who makes a mispick, every burler who slights her work, every spinner who makes a needless knot, in short, every person who makes waste of any kind, of course, makes the amount to be divided smaller, by making a loss to the concern; and we think a manifest improvement is evident.

“Having really begun to understand the working of the system, it is hoped that a great advance will be made during the present year.

“If each person in the yard will attend to the little savings, the woolwashers save every scrap of wool, the spinners make less waste, the weavers weave up the whole bobbin, and so on through all the branches, a great saving can still be made, which will wonderfully affect the amount of earnings.

“The business outlook for the coming year is not very bright, and every effort towards a wise and persistent economy will be necessary to enable us to make a dividend next March.”

This was the last bonus paid. Meanwhile the ten-hour experiment had been begun and it became necessary to expend capital in improvements. The following is the circular of 1884:

“By a reference to the circular of March 1st, 1883, it will be seen that attention was called to the gloomy prospect for business at that time.

“We very much regret that the unsatisfactory condition of trade which was feared has been realized, and the result makes it impossible to distribute any bonus to labor this year.

“Some will no doubt argue, that the reason why there are no profits is because of the heavy expenses incurred for improvements. The remark has been made ‘That new finishing room will eat up all the bonus this year,’ conveying the impression that the current year’s profits are used to pay for improvements; such, however, is not the fact. New buildings, or the remodeling of old buildings, and new machinery are paid for from former profits of capital, that is, profits of former successful years which have been laid aside for such purposes. They are simply new tools supplied to labor, to render work easier and its result in profit more certain. The cost of improvements has nothing to do with the profit or loss of a particular year.

“It is believed that the attention to small savings, and care in handling materials, has been as great as heretofore but perfection has not yet been reached. There have been cases of gross carelessness in regard to work. There are still some who do not realize the fact that when they waste for the company they waste for themselves,

and we hope that as time goes by all will see their interest in saving at all points, large and small, and that we shall retain in our employ only those who can understand this matter.

“Many things have made the production this year smaller than that of last year. We are still somewhat doubtful of the wisdom of running only ten hours. We hope, however, that every person will work so faithfully, that we shall be able to continue to do so. With our greatly improved facilities we ought now to turn out goods at a cost to secure a profit, and a consequent bonus to labor next year.”

The result of the business of 1884 was even less satisfactory than that of 1883. This was due in large measure to general industrial causes beyond control. But of the employes and their efforts the circular said: “It is believed, however, that a large majority have been as careful and as conscientious as possible and the officers of the company look with pride upon such, hoping and believing that the system of participation will yet produce good results, far beyond what it has accomplished in the past.”

PARTICIPATION AT PEACE DALE, BY YEARS.

DATE.	DIVIDEND.	
	Per cent.	Amount.
January 31, 1879,	-	No dividend
January 31, 1880,	Five per cent	\$5,842 40
January 31, 1881,	Five per cent	\$5 999 65
January 31, 1882,	Three per cent	\$3,760 14
January 31, 1883,	Three per cent	\$3,760 35
January 31, 1884,	-	No dividend
January 31, 1885,	-	No dividend

The circulars do not state with arithmetical definiteness the basis on which the company decides whether it can divide profits with labor, and if it can what per cent the bonus shall be. The general explanation of the first circular is deemed sufficiently explicit. We are permitted to add, however, that the general rule is, that after all fixed charges are paid including a reasonable dividend on capital, the remaining surplus is divided into substantially equal parts, one-half going to capital, the other half to labor. The initial dividend reserved for capital is smaller than it is in the case of several European

profit sharing concerns. Another extraordinary fact is that no salaries are paid for business management. The management own the stock and are content to call the dividend their reward for both investment and management.

The help have no access to the books of the company, but they watch quotations closely and know pretty accurately what is being accomplished and what to expect.

Both before and since profit sharing was commenced the company and its employés have enjoyed relations of almost unbroken harmony. Twenty-five years ago a strike was threatened on account of a reduction of wages, but it quickly ended in the acceptance of the company's conditions. About the first of July, 1885, a change in the system of fines for mispicks in the weave room created dissatisfaction. The finable faults were made more specific than they had been and the weavers thought the result would be a reduction of their net wages. The trouble was very soon ended with mutual satisfaction. These are the only differences that have occurred in the long history of the business.

There has been no general change in wages since 1878. Wages have been as nearly as possible the average rate paid for like work elsewhere, but with fewer fluctuations. They have been a little lower under a boom and a little higher in times of depression than in most other mills.

Employés in conversation show that they have an intelligent apprehension of the policy of the company and that they understand the conditions of success.

Care was taken to get at the real feeling and opinion of the employés, old and young. They have faith in the sincerity of the company's purpose to promote their wellbeing, and they look upon profit sharing as a good thing for both the company and themselves; not a philanthropy but an excellent business arrangement. Although the amount of an individual bonus is not large, it is valued as a substantial gain and when the end of the year fails to bring it, it is missed.

But of greater importance, unquestionably, than the economic gain is the disciplinary benefit of this form of profit sharing. The development of care and diligence, that is, the moral education of the employé, has been as remarkable as it is gratifying. On this aspect of the experiment the explicit statements

of the circulars, showing the progress from year to year, leave nothing to be said.

The policy of the company has been favored by the isolation of the place. There was no railroad through Peace Dale until 1876. Trade union influence is unknown there and the population contains little of the floating element.

Direct profit sharing is supplemented by various other important measures designed to benefit and encourage deserving employes. This company was a pioneer in the ten-hour experiment and it has persistently encouraged its workpeople to buy or build homes and acquire a permanent interest in the village, instead of occupying rented houses.

Mr. R. G. Hazard was a firm believer in the salutary effect of home owning and his successors fully share his views. Nor has the company's encouragement in this direction been in words only. It has been the practice to extend pecuniary assistance in various ways according to the circumstances of each case. Sometimes it has given possession of a piece of land on an agreement to give a deed when the property should be paid for. In other cases money has been advanced to buy or build a house, a mortgage being taken. There are not less than forty houses in this small village owned by employes of the Peace Dale Manufacturing Company, most of them paid for with money earned in its employ.

The ten-hour experiment was decided on in 1882, when all Rhode Island mills were running 11 hours or longer. It was announced to the help in a circular, dated December 30, setting forth the company's belief that by beginning promptly and working energetically to quitting time as much could be accomplished in ten hours as was being accomplished in eleven. Though the right to discontinue the experiment was reserved, and at the end of a year the company were doubtful of its success, they are now fully satisfied that a day of ten hours is long enough.

No benefit association or other system of insurance has been established as yet. There is no system of pensions but the company at its discretion pensions employes that have been long in its service or keeps them in nominal employment and continues their wages.

A Free Library was endowed by Isaac P. Hazard.

The Hazards have their homes in Peace Dale and make its material and moral prosperity their concern. Their residences are unpretentious, offering no occasion of envy to their employés. Rowland G. Hazard was a Quaker. It was his honorable ambition to make his business a blessing to all connected with it. His influence lives in the policy of the company and in the economic prosperity and moral wellbeing of its workpeople.

Lister Brothers.

The firm of Lister Brothers, proprietors of the Passaic Agricultural Chemical Works, at Newark, N. J., employing 400 to 500 hands, has been in the habit for years of rewarding faithful service by gifts of money in addition to stipulated wages, dividing \$2,000 to \$3,000 a year in this way. In 1882 profit sharing was tried, but it was discontinued after the division for that year.

The plan of division differed essentially from either of the plans which we have previously described.

A fair valuation of the business having been made, the firm reserved to itself from the year's profit ten per cent net on the valuation. The balance of profit was divided as a bonus among the employés. The division of the bonus was not as a percentage on wages, but by classes constituted as follows:

Class 1. Four or five of the principal men who had been in the service of the firm for many years.

Class 2. The head bookkeepers, salesmen, head foremen and the commodore of Lister Brothers' boats.

Class 3. Captains of boats and foremen about the manufactory.

Class 4. All remaining employés: men, women, and children.

The bonus was the same to each member of a class, so that some earning relatively low wages received as large a bonus as others getting much higher wages.

The sum divided was, in round numbers, \$15,000. Individual employés received, in some cases, as much as \$250 each.

The bonus was a clear addition to wages, which were not reduced to meet it or in consequence of it. The next year when profit sharing was abandoned the wages of certain indi-

viduals who had shown their appreciation by greater application were increased.

The dividend to labor could not have been paid the following year because of a failure to effect a timely settlement with parties owing the firm a considerable sum. Apart from this fact the firm did not feel encouraged to continue the experiment. While most of the employés were very grateful for what they received, others complained that they had been unfairly dealt with. Among the worst complainers were some who had been most liberally remembered. Certain men who had received \$250 each "celebrated" by getting drunk — and discharged.

Upon the majority of the employés, however, the effect of the bonus was to encourage them and to incite them to greater diligence in their work during the following year. A man would be heard to say: "I have saved so much waste, next year I shall get such a dividend"; or "I have accomplished so much extra work, I shall get into a higher class."

Some of the most intelligent employés of the firm think that it might have been better had a part of the very large bonus of 1882 been held in reserve toward a bonus the next year and that if this had been done profit sharing would have been continued indefinitely.

Notwithstanding the unfortunate termination of the experiment, the majority of the employés feel very friendly toward Lister Brothers, as they have always done. They have never struck. Some of them have been with the firm for forty years, and a large number from fifteen to twenty years. They live in the firm's tenements, or elsewhere as they choose. They are of many nationalities, Irish, Swedes, and Germans predominating. They are connected with various benefit societies in Newark, but there is no such society maintained by Lister Brothers and their employés conjointly, nor any system of pensions for the superannuated.

*The Pillsbury Flour Mills.**

The most extensive example of profit sharing in the United States is that of the Pillsbury Flour Mills, at Minneapolis.

* We are indebted for this account of the Minneapolis experiment to E. W. Bemis, Ph. D., of Springfield, Mass.

With a daily capacity of 9,500 barrels of flour in their three mills, with an output of flour of \$10,000,000 a year, and with an elevator business of \$8,000,000 more, it is the largest industry of the kind in the world.

Through the kindness of members of the firm, and of Mr. J. S. Rankin of Minneapolis, the following information has been obtained. After paying the running expenses of all kinds and a moderate interest on the capital invested, which is \$2,500,000, together with large sums occasionally borrowed, a certain per cent of the net surplus, the exact per cent not being revealed, is divided among two classes of employés: first, those who have been employed five years, without regard to position, and second, those occupying positions of especial importance, without regard to time employed. The wages of the first class were thereby advanced the past year about fifty per cent and of the second class about sixty-five per cent. The plan went into operation three years ago. Two years ago \$25,000, one year ago \$26,000, and during the year ending September 24th, 1885, \$35,000 were thus divided among about one hundred of the eleven hundred men at work in the mills. The five year limit is now bringing in many, and next year will bring in a large number, as the "A" mill, with a capacity of 6,200 barrels daily, was started about four years ago, and a large increase of force was then hired.

Since a certain portion of the labor is necessarily transient, and many poor workmen have to be sifted out, for it is the intention to employ only the best men obtainable, it has not been thought wise to apply the principle to all the employés; but so satisfactory has the present plan proved to the company, as well as to the men, that it will be extended next year to the elevators. Wages are not below usual market rates; some of the workmen claim that higher wages are paid than in any other mills in the country. Yet the company consider that their plan of profit sharing has greatly increased their own profits by the voluntary service of their men in times of need, by their interest in the business, and in other ways. The evident goodwill of the employés is regarded as the most agreeable result. A leading member of the firm expresses himself very emphatically relative to the financial and moral benefits of the arrangement, and regards it as one that will not

be willingly relinquished. Especial credit is due to Mr. Charles A. Pillsbury for the great success attending this attempt.

PROFIT SHARING THROUGH STOCK-OWNING, IN MASSACHUSETTS.

So far as the dividend on shares of capital stock held by workmen is the reward of investment it is not an example of profit sharing. Profit sharing is a reward of labor, as such, by participation in the profits of the industrial enterprise in which it is employed. Any confusion of thought on this point would lead to erroneous conclusions.

But when a majority of the workmen in any industrial enterprise are owners of its capital stock and their ownership extends to a majority of the shares, the profits of the business will include an increment which is the reward of labor. Diligence, caretaking, and fidelity are promoted by stock-ownership to a degree that is perceptible in the balance sheet. If the business is making money the dividend will be the larger by reason of this increased efficiency of labor, and in the unsuccessful years the losses will be smaller. When a dividend is paid it is a real, though concealed, case of profit sharing.

Participation by labor, through stock-owning, in the profits of the business in which it is engaged is especially provided for and encouraged in Massachusetts in manufacturing corporations organized as co-operative associations. The term co-operation as here applied requires explanation.

Broadly speaking, all industry carried on by the conjoint efforts of capital, labor, and business talent is co-operation.

In a more special sense a hearty effort of all the parties — workers and capitalists — to make the enterprise a success, in the understanding that the greater the success the greater will be the reward of each individual, in proportion to the services he renders, is co-operation. It is in this sense that the word is used by partnerships and corporations like the *Maison Leclaire* and the *Peace Dale* company, which divide profits partly on the basis of capital invested, and partly on the basis of services rendered as measured by wages.

In a still more special sense co-operation means a participation by both labor and capital in the control of an industrial enterprise as well as in the enjoyment of its profits, and special

attention to profit sharing by a distribution of at least a portion of the profits on some other basis than that of capital invested. In all co-operative associations the voting power of capital is limited. The Boston Tailors Associative Union of 1849, the first co-operative association in Massachusetts to engage in production, divided profits in proportion to labor performed. The co-operative stores in this country and in Great Britain divide profits on the basis of purchases. The co-operative productive associations of Great Britain divide partly on capital, partly on wages, and some of them also on purchases.

The co-operative manufacturing corporations of Massachusetts, though authorized by law to distribute their profits "among workmen, purchasers and stockholders," do not in practice divide on any other basis than that of capital invested. Though each stockholder has but one vote the interest of members as stockholders has subordinated their interest as laborers. These corporations are, therefore, profit sharing enterprises only through the distribution of their capital stock. They would be more perfectly co-operative and more perfect types of profit sharing if they divided profits partly on the basis of capital invested and partly on the basis of services rendered as measured by wages.

Co-operative corporations were authorized by chapter 290 of the Acts of 1866. The act provided that seven or more persons of lawful age, inhabitants of this Commonwealth, might, by written articles of agreement, associate themselves for purposes of trade, or for carrying on any lawful mechanical, manufacturing or agricultural business within the State, and in due process become a corporation enjoying the usual powers and privileges, and subject to the usual duties, restrictions, and liabilities of similar corporations, except as these were limited or enlarged by this act. The business management was to be vested in a president, a board of not less than three directors, and a treasurer, chosen by the stockholders annually, and such other officers as should be prescribed by the by-laws. The distinctive provisions were those of sections 5, 7, 8, and 12, as follows :

SECT. 5. The amount of capital stock of such association shall be fixed and limited in its articles of association, and it may be any

sum not exceeding fifty thousand dollars. The association may increase or diminish its amount and its number of shares at any meeting of the stockholders, specially called for that purpose, and within thirty days after the passing of any vote increasing or diminishing its capital stock, shall cause such vote to be recorded in the clerk's office of the place where its business is carried on, but no share shall be issued for less than its par value.

SECT. 7. Such association may take, hold and convey such real and personal estate as is necessary for the purposes of its organization, and may sue and be sued in its associate name; and no member thereof shall be entitled to hold or claim any interest therein exceeding the sum of one thousand dollars; nor shall any member, upon any subject, be entitled to more than one vote.

SECT. 8. No certificate of shares shall be issued to any person until the full amount thereof shall have been paid in cash. No person shall be allowed to become a shareholder in such association except by the consent of the managers of the same.

SECT. 12. There shall be such distribution of the profits or earnings of such association among the workmen, purchasers and stockholders, as shall be described by the by-laws, at such times as therein prescribed, and as often, at least, as once in twelve months: *provided*, that no distribution shall be declared and paid until a sum equal at least to ten per cent of the net profits shall be appropriated for a contingent or sinking fund, until there shall have accumulated a sum equal to thirty per cent in excess of such capital stock.

The corporation laws of the State were recast in chapter 224 of the Acts of 1870 (Public Statutes, chapter 106). The distinctive provisions for co-operative associations above quoted were embodied in the new statute, with the exception of section 8. Practically, it is possible for directors without the express permission of that section to exercise choice when stock is for sale in virtue of the customary by-law that shares for sale must be offered first to the corporation. In the new law the capital of a co-operative association was required to be not less than \$1,000; the word "co-operative" was required to form part of the corporate name, and shares to an amount not exceeding twenty dollars in the aggregate were exempted from attachment and execution. In 1879 the maximum capital stock was fixed at \$100,000.

The following investigation extends only to co-operative enterprises engaged in manufacturing industry, because only

these exhibit the feature we are here studying, namely, participation in the profits of an enterprise by the workers who perform the labor of that enterprise, and who for the time are dependent on that enterprise for employment. In co-operative distribution there is but little labor performed, and the customers among whom the profits are divided are not employed by or depending for employment on their store. For a similar reason we exclude the co-operative creameries and milk associations, the stockholders of which, as a rule, are independent farmers. The two or three co-operative printing and newspaper publishing associations, ice companies, and the like might be classed with the manufacturing companies as profit sharing enterprises, but they represent very little capital and contain too few individuals to make their investigation, at this time, worth while.

Co-operative Manufacturing in Massachusetts: 1870 to 1875.

In the five years, 1870 to 1875, there were organized thirteen co-operative manufacturing corporations, only two of which are now in existence. The Somerset Co-operative Foundry Company, organized October 18, 1867, was in active operation during this period. Its history down to the present time is given elsewhere.

The Union Cigar Makers' Co-operative Association was established at Westfield prior to 1870, probably in 1869. Its capital in 1870 was \$1,750 in nine shares. In 1872 the capital was \$7,000 in seven shares. The assets and debts of the association for certain years are presented in tabular form, as follows:

ASSETS AND DEBTS.	1870	1872	1873	1874
Assets,	\$11,361	\$27,800	\$32,050	\$7,000
Debts,	8,000	24,839	23,530	none

The North Adams Co-operative Shoe Company, at Adams, was organized June 21, and chartered July 13, 1870. Its capital was \$6,000 divided into 60 shares; increased in 1871 to

\$6,400 and 64 shares. A statement of the assets and debts from 1871 to 1875, when its last report was made, follows :

ASSETS AND DEBTS.	1871	1872	1873	1874	1875
Assets,	\$12,092	\$10,685	\$9,671	\$15,858	\$3,454
Debts,	5,045	3,274	3,273	4,354	200

The Hampden Co-operative Association was organized, to manufacture cigars, at Westfield, December 20, and chartered December 28, 1870. Its capital was \$4,000 in eight shares. Its last report was made in 1874, when its capital was \$8,000 in sixteen shares, its assets, \$44,005, and its liabilities, \$36,144.

The Howard Co-operative Company was organized at Lynn, February 6, and chartered February 28, 1871. Its capital was \$2,000 in 11 shares. The assets and debts for 1873 and 1874 were as follows :

ASSETS AND DEBTS.	1873	1874
Assets,	\$4,574	\$4,511
Debts,	1,975	2,056

The Cigar Manufacturers' Co-operative Association was organized at Westfield, June 17, and chartered June 26, 1871. Its capital was \$2,400 in twelve shares, which was soon increased to \$12,000. The following were the assets and debts for 1872 and 1873 :

ASSETS AND DEBTS.	1872	1873
Assets,	\$56,989	\$71,945
Debts,	47,874	55,620

The Essex Co-operative Boot and Shoe Company was organized at Lynn, August 20, and chartered September 2, 1872. Its assets in 1874 were \$8,077 and its liabilities, \$4,251. Its

last return was for the year 1876, when it reported its assets as \$9,648 and debts, \$5,881.

The Sagamore Co-operative Boot and Shoe Company of Lynn was organized August 29, and chartered September 6, 1872. Its capital was \$2,000 in forty shares. It never made a report.

The East Templeton Co-operative Chair Company, chartered October 25, 1872, is still in successful operation. Its condition since 1875 may be followed in the tables, and its history in subsequent pages.

The Stoneham Co-operative Shoe Company was chartered January 10, 1873. It has enjoyed great success to the present time. Its history is given in full, and its yearly condition since 1875 in the tables. In 1874 its assets were \$20,259 and its liabilities, \$9,401.

The Truro Co-operative Boot and Shoe Manufacturing Company was organized at Truro, February 6, and chartered February 11, 1873. Its capital was \$2,100 in 21 shares. It never made a report.

The Westfield Cigar Makers' Co-operative Association was organized at Westfield, September 8, and chartered September 12, 1873. Its capital was \$1,050 in seven shares, increased the next year to \$1,200 in eight shares. Its assets in 1874 were \$8,511 and its liabilities, \$6,103. Its last report was made in 1876, when its assets were \$4,176 and its debts, \$7,222.

The Springfield Cigar Makers' Co-operative Association was organized at Springfield, September 17, and chartered December 19, 1873. Its capital was \$3,500 in seven shares. In 1874 its assets were \$5,214 and its liabilities, \$4,940. Its last report was made in 1875 when its assets were \$12,115 and its debts, \$8,000.

The Massachusetts Cigar Makers' Co-operative Association was organized at Westfield, December 23, and chartered December 27, 1873. Its capital was \$1,200 in eight shares. Its last report was made in 1878.

The Eastern Co-operative Association was organized, to manufacture cigars, at Westfield, January 8, and chartered January 24, 1874. Its capital was \$4,500 in nine shares. Its last report was made in 1878.

Co-operative Manufacturing in Massachusetts: 1875 to 1884.

Since 1875 the abstracts of certificates of corporations have given in detail many important statistics previously lumped under assets and liabilities, and the tabulation has been uniform from year to year. The following tables, compiled from the annual abstracts, exhibit the rise and fall of co-operative manufacturing enterprises in this State for the ten years beginning 1875, specifying in many cases the value of machinery and of materials and products in process, and indicating in some degree by the figures of cash and debts receivable, and of debts owed, the volume of business. The figures given in the tables indicate the condition of each company at the time of the holding of the annual meeting, which, in the majority of cases, has occurred in the month of January, of the year named, or in the months of November or December immediately preceding. A few of the companies, however, have held their annual meetings from four to seven months later, namely, the National and Marlborough in May; the Springfield and Leonard in June; the North Adams and Westfield in July, and the Athol in August. No returns were made for the Orient, in 1877, and the Wakefield, in 1884.

If any association, that should have been included, has been omitted from these tables, or from the foregoing record of companies organized before 1875, — though we think none has been — it is because we have been unable to ascertain that it was a manufacturing company.

PROGRESS OF CO-OPERATIVE MANUFACTURING

1875.

	NAME AND LOCATION.	Product.	Date of Organization.
1	Eastern Co-operative Association, Westfield.	Cigars.	Jan. 8, 1874
2	East Templeton Co-operative Chair Co., Templeton.	Chairs, etc.	Oct. 19, 1872
3	Essex Co-operative Boot and Shoe Co., Lynn.	Shoes.	Aug. 20, 1872
4	Massachusetts Cigar Makers' Co-operative Association, Westfield.	Cigars.	Dec. 23, 1873
5	North Adams Co-operative Shoe Co., North Adams.	Shoes.	June 21, 1870
6	Stoneham Co-operative Shoe Co., Stoneham.	Shoes.	Jan. 9, 1873
7	Springfield Cigar Makers' Co-operative Association, Springfield.	Cigars.	Sept. 17, 1873
8	Somerset Co-operative Foundry Co., Somerset.	Stoves and castings.	Oct. 18, 1867
9	Westfield Cigar Makers' Co-operative Association, Westfield.	Cigars.	Sept. 8, 1873

1876.

1	Eastern Co-operative Association, Westfield.	Cigars.	Jan. 8, 1874
2	East Templeton Co-operative Chair Co., Templeton.	Chairs, etc.	Oct. 19, 1872
3	Essex Co-operative Boot and Shoe Co., Lynn.	Shoes.	Aug. 20, 1872
4	Massachusetts Cigar Makers' Co-operative Association, Westfield.	Cigars.	Dec. 23, 1873
5	Stoneham Co-operative Shoe Co., Stoneham.	Shoes.	Jan. 9, 1873
6	Somerset Co-operative Foundry Co., Somerset.	Stoves and castings.	Oct. 18, 1867
7	Westfield Cigar Makers' Co-operative Association, Westfield.	Cigars.	Sept. 8, 1873
8	Middlesex Co-operative Boot and Shoe Co., Stoneham.	Boots and shoes.	March 4, 1875
9	National Cigar Makers' Co-operative Association, Westfield.	Cigars.	April 28, 1875
10	Phoenix Cigar Makers' Co-operative Association, Westfield.	Cigars.	June 5, 1875

1877.

1	Eastern Co-operative Association, Westfield.	Cigars.	Jan. 8, 1874
2	East Templeton Co-operative Chair Co., Templeton.	Chairs, etc.	Oct. 19, 1872
3	Massachusetts Cigar Makers' Co-operative Association, Westfield.	Cigars.	Dec. 23, 1873
4	Stoneham Co-operative Shoe Co., Stoneham.	Shoes.	Jan. 9, 1873
5	Somerset Co-operative Foundry Co., Somerset.	Stoves and castings.	Oct. 18, 1867
6	Middlesex Co-operative Boot and Shoe Co., Stoneham.	Boots and shoes.	March 4, 1875
7	National Cigar Makers' Co-operative Association, Westfield.	Cigars.	April 28, 1875
8	Phoenix Cigar Makers' Co-operative Association, Westfield.	Cigars.	June 5, 1875
9	Marlborough Co-operative Boot and Shoe Co., Marlborough.	Boots and shoes.	May 23, 1876
10	Orient Co-operative Boot and Shoe Co., Marlborough.	Boots and shoes.	June 23, 1876

ENTERPRISES IN MASSACHUSETTS: 1875 TO 1884.

1875.

Date of Charter.	Capital Stock.	Number of Shares.	Total Assets.	Machinery.	Manufactures, Materials, and Stocks in Process.	Cash and Debts Receivable.	Debts.	Balance of Profit and Loss.	
Jan. 24, 1874	\$4,500	9	\$11,337	-	\$5,000	\$6,337	\$6,659	\$178	1
Oct. 25, 1872	15,000	150	32,387	-	10,788	10,799	16,834	498	2
Sept. 2, 1872	4,000	8	12,761	\$1,389	2,508	8,829	8,493	-	3
Dec. 27, 1873	1,500	9	12,134	-	5,376	6,173	9,425	1,209	4
July 13, 1870	6,400	64	3,454	500	100	-	200	-	5
Jan. 10, 1873	10,000	40	22,434	1,309	3,680	17,446	7,990	4,444	6
Dec. 19, 1873	3,500	7	12,115	none	-	-	8,000	615	7
-	30,000	300	77,830	-	19,353	29,926	17,361	6,000	8
Sept. 12, 1873	1,350	9	11,925	-	5,900	6,000	8,111	-	9

1876.

Jan. 24, 1874	\$4,500	9	\$7,557	-	\$2,015	\$5,280	\$6,908	-	1
Oct. 25, 1872	15,000	150	32,242	\$9,720	11,078	8,010	17,242	-	2
Sept. 2, 1872	4,000	8	9,648	1,463	2,197	5,953	5,881	-	3
Dec. 27, 1873	7,000	10	15,717	-	5,595	9,790	7,148	-	4
Jan. 10, 1873	10,000	40	16,684	1,762	5,258	9,130	5,896	\$253	5
-	30,000	300	75,424	-	16,140	30,342	10,600	6,000	6
Sept. 12, 1873	1,350	9	4,176	-	1,418	2,529	7,222	4,397	7
March 17, 1875	10,000	40	14,249	2,159	3,897	8,193	4,241	8	8
May 7, 1875	2,100	7	5,158	-	2,420	2,501	2,772	286	9
June 22, 1875	3,500	7	8,772	-	4,000	4,772	4,113	1,159	10

1877.

Jan. 24, 1874	\$4,500	9	\$1,003	-	\$3	\$1,000	\$2,160	-	1
Oct. 25, 1872	15,000	150	33,358	-	-	-	18,358	\$1,269*	2
Dec. 27, 1873	7,000	10	14,738	-	5,357	8,549	4,986	-	3
Jan. 10, 1873	10,000	40	19,372	\$1,309	6,594	11,469	6,811	1,800	4
-	30,000	300	79,617	-	18,437	30,441	15,883	2,910	5
March 17, 1875	10,000	40	20,474	2,214	2,847	13,593	8,626	756	6
May 7, 1875	2,100	7	40	-	-	40	-	-	7
June 22, 1875	3,500	7	8,237	-	4,027	4,210	4,630	107	8
May 25, 1876	10,000	40	15,724	3,113	3,606	4,767	5,724	-	9
June 24, 1876	2,000	20	-	-	-	-	-	-	10

* Loss.

PROGRESS OF CO-OPERATIVE MANUFACTURING

1878.

	NAME AND LOCATION.	Product.	Date of Organization.
1	East Templeton Co-operative Chair Co., Templeton.	Chairs, etc.	Oct. 19, 1872
2	Massachusetts Cigar Makers' Co-operative Association, Westfield.	Cigars.	Dec. 23, 1873
3	Stoneham Co-operative Shoe Co., Stoneham.	Shoes.	Jan. 9, 1873
4	Somerset Co-operative Foundry Co., Somerset.	Stoves and castings.	Oct. 18, 1867
5	Middlesex Co-operative Boot and Shoe Co., Stoneham.	Boots and shoes.	Mar. 4, 1875
6	Phoenix Cigar Makers' Co-operative Association, Westfield.	Cigars.	June 5, 1875
7	Marlborough Co-operative Boot and Shoe Co., Marlborough.	Boots and shoes.	May 23, 1876
8	Kingston Co-operative Foundry, Kingston.	Stoves, machinery, and castings.	Dec. 2, 1876
9	Leonard Co-operative Foundry, Taunton.	Ranges, stoves, and hollow ware.	May 14, 1877

1879.

1	East Templeton Co-operative Chair Co., Templeton.	Chairs, etc.	Oct. 19, 1872
2	Stoneham Co-operative Shoe Co., Stoneham.	Shoes.	Jan. 9, 1873
3	Somerset Co-operative Foundry Co., Somerset.	Stoves and castings.	Oct. 18, 1867
4	Middlesex Co-operative Boot and Shoe Co., Stoneham.	Boots and shoes.	Mar. 4, 1875
5	Phoenix Cigar Makers' Co-operative Association, Westfield.	Cigars.	June 5, 1875
6	Kingston Co-operative Foundry, Kingston.	Stoves, machinery, and castings.	Dec. 2, 1876
7	Leonard Co-operative Foundry, Taunton.	Ranges, stoves, and hollow ware.	May 14, 1877

1880.

1	East Templeton Co-operative Chair Co., Templeton.	Chairs, etc.	Oct. 19, 1872
2	Stoneham Co-operative Shoe Co., Stoneham.	Shoes.	Jan. 9, 1873
3	Somerset Co-operative Foundry Co., Somerset.	Stoves and castings.	Oct. 18, 1867
4	Middlesex Co-operative Boot and Shoe Co., Stoneham.	Boots and shoes.	Mar. 4, 1875
5	Phoenix Cigar Makers' Co-operative Association, Westfield.	Cigars.	June 5, 1875
6	Kingston Co-operative Foundry, Kingston.	Stoves, machinery, and castings.	Dec. 2, 1876
7	Leonard Co-operative Foundry, Taunton.	Ranges, stoves, and hollow ware.	May 14, 1877
8	Athol Co-operative Furniture Co., Athol.	Furniture.	Aug. 5, 1879
9	Co-operative Furniture Co., Orange.	Furniture.	Dec. 6, 1878

PROFIT SHARING.

199

ENTERPRISES IN MASSACHUSETTS : 1875 TO 1884 — Continued.

1878.

Date of Charter.	Capital Stock.	Number of Shares.	Total Assets.	Machinery.	Manufactures, Materials, and Stocks in Process.	Cash and Debts Receivable.	Debts.	Balance of Profit and Loss.	
Oct. 25, 1872	\$15,000	150	\$35,166	-	\$11,050	\$11,242	\$20,013	\$153	1
Dec. 27, 1873	7,000	10	8,649	-	2,636	5,625	\$7,186	-	2
Jan. 10, 1873	10,000	40	17,674	2,202	5,295	6,175	7,555	-	3
-	30,000	300	68,465	-	12,834	30,632	13,711	-	4
Mar. 17, 1875	10,000	40	23,149	2,299	4,478	2,890	12,957	-	5
June 22, 1875	3,500	7	8,178	-	2,392	5,288	3,538	1,140	6
May 25, 1876	10,000	40	10,002	3,113	873	1,393	2	4,206	7
July 14, 1877	9,300	93	12,775	1,727	3,202	1,244	3,442	33	8
May 23, 1877	25,000	250	36,827	1,000	15,651	3,509	11,388	-	9

1879.

Oct. 25, 1872	\$15,000	150	\$33,465	\$3,000	\$9,935	\$11,462	-	\$762	1
Jan. 10, 1873	10,000	40	20,703	2,537	4,221	13,945	\$8,056	843	2
-	30,000	300	69,953	-	16,568	20,841	15,429	-	3
Mar. 17, 1875	10,000	40	20,915	2,628	4,155	14,132	9,457	500	4
June 22, 1875	3,500	7	5,806	none	2,619	3,187	2,067	239	5
July 14, 1877	10,800	108	14,919	1,766	3,437	2,608	3,112	107	6
May 23, 1877	25,000	250	38,862	1,000	10,601	7,163	12,920	942	7

1880.

Oct. 25, 1872	\$15,000	150	\$34,539	\$2,800	\$9,929	\$14,287	\$18,613	\$757	1
Jan. 10, 1873	10,000	40	27,733	\$2,994	7,670	17,069	15,796	-	2
-	30,000	300	65,000	10,088	10,691	27,311	12,626	\$4,476	3
Mar. 17, 1875	10,000	40	25,461	2,616	8,753	14,092	14,591	450	4
June 22, 1875	3,500	7	7,105	-	2,633	4,473	3,438	-	5
July 14, 1877	11,550	115½	18,971	1,780	5,064	4,828	6,886	535	6
May 23, 1877	25,000	250	39,772	1,000	10,620	8,054	13,319	511	7
Aug. 27, 1879	3,689	30	6,789	none	4,414	1,850	2,677	-	8
Dec. 9, 1878	1,500	15	9,619	-	7,334	2,285	7,109	1,010	9

PROGRESS OF CO-OPERATIVE MANUFACTURING

1881.

	NAME AND LOCATION.	Product.	Date of Organization.
1	East Templeton Co-operative Chair Co., Templeton.	Chairs, etc.	Oct. 19, 1872
2	Stoneham Co-operative Shoe Co., Stoneham.	Shoes.	Jan. 9, 1873
3	Somerset Co-operative Foundry Co., Somerset.	Stoves and castings.	Oct. 18, 1867
4	Middlesex Co-operative Boot and Shoe Co., Stoneham.	Boots and shoes.	Mar. 4, 1875
5	Phoenix Cigar Makers' Co-operative Association, Westfield.	Cigars.	June 5, 1875
6	Kingston Co-operative Foundry, Kingston.	Stoves, machinery, and castings.	Dec. 2, 1876
7	Leonard Co-operative Foundry, Taunton.	Ranges, stoves, and hollow ware.	May 14, 1877
8	Athol Co-operative Furniture Co., Athol.	Furniture.	Aug. 5, 1879
9	Co-operative Furniture Co., Orange.	Furniture.	Dec. 6, 1878
10	Greenfield Co-operative Manufacturing Co., Greenfield.	Hardware.	April 7, 1880

1882.

1	East Templeton Co-operative Chair Co., Templeton.	Chairs, etc.	Oct. 19, 1872
2	Stoneham Co-operative Shoe Co., Stoneham.	Shoes.	Jan. 9, 1873
3	Somerset Co-operative Foundry Co., Somerset.	Stoves and castings.	Oct. 18, 1867
4	Middlesex Co-operative Boot and Shoe Co., Stoneham.	Boots and shoes.	Mar. 4, 1875
5	Phoenix Cigar Makers' Co-operative Association, Westfield.	Cigars.	June 5, 1875
6	Kingston Co-operative Foundry, Kingston.	Stoves, machinery, and castings.	Dec. 2, 1876
7	Leonard Co-operative Foundry, Taunton.	Ranges, stoves, and hollow ware.	May 14, 1877
8	Athol Co-operative Furniture Co., Athol.	Furniture.	Aug. 5, 1879
9	Co-operative Furniture Co., Orange.	Furniture.	Dec. 6, 1878
10	Greenfield Co-operative Manufacturing Co., Greenfield.	Hardware.	April 7, 1880

1883.

1	East Templeton Co-operative Chair Co., Templeton.	Chairs, etc.	Oct. 19, 1872
2	Stoneham Co-operative Shoe Co., Stoneham.	Shoes.	Jan. 9, 1873
3	Somerset Co-operative Foundry Co., Somerset.	Stoves and castings.	Oct. 18, 1867
4	Middlesex Co-operative Boot and Shoe Co., Stoneham.	Boots and shoes.	Mar. 4, 1875
5	Kingston Co-operative Foundry, Kingston.	Stoves, machinery, and castings.	Dec. 2, 1876
6	Leonard Co-operative Foundry, Taunton.	Ranges, stoves, and hollow ware.	May 14, 1877
7	Athol Co-operative Furniture Co., Athol.	Furniture.	Aug. 5, 1879
8	Greenfield Co-operative Manufacturing Co., Greenfield.	Hardware.	April 7, 1880
9	American Co-operative Boot and Shoe Co., Stoneham.	Boots and shoes.	Oct. 4, 1882

ENTERPRISES IN MASSACHUSETTS: 1875 TO 1884 — Continued.

1881.

Date of Charter.	Capital Stock.	Number of Shares.	Total Assets.	Machinery.	Manufactures, Materials, and Stocks in Process.	Cash and Debts Receivable.	Debts.	Balance of Profit and Loss.	
Oct. 25, 1872	\$15,000	150	\$31,167	-	\$6,956	\$12,104*	\$16,167	-	1
Jan. 10, 1873	15,000	60	37,406	\$2,796	10,100	19,010	17,960	\$4,390	2
-	30,000	300	63,002	-	11,166	28,223	8,425	\$,053	3
Mar. 17, 1875	10,000	40	30,164	2,898	9,130	17,772	17,780	1,380	4
June 22, 1875	3,500	7	7,361	-	2,726	4,273	3,859	-	5
July 14, 1877	16,000	160	21,390	1,666	2,965	9,301	7,700	354	6
May 23, 1877	25,000	250	44,336	1,000	13,810	8,632	12,655	-	7
Aug. 27, 1879	5,000	-	11,236	300	4,200	3,130	6,363	2,557	8
Dec. 9, 1878	3,200	-	11,168	-	9,133	2,030	7,203	-	9
April 16, 1880	10,000	50	12,780†	3,884	5,623	1,543	9,351	1,700†	10

* \$4,760 is for insurance, having lost \$7,822 by fire. † Total liabilities, \$14,481. ‡ Loss.

1882.

Oct. 25, 1872	\$20,000	200	\$42,894	\$6,539	\$11,807	\$5,174	\$22,894	-	1
Jan. 10, 1873	15,000	60	39,225	1,351	10,474	20,553	13,481	\$3,015	2
-	30,000	300	61,022	-	11,710	23,756	3,591	6,904	3
Mar. 17, 1875	10,000	40	32,303	2,643	8,795	20,865	16,905	1,249	4
June 22, 1875	3,500	7	6,413	-	1,657	4,457	2,589	-	5
July 14, 1877	16,000	160	20,565	1,666	1,982	8,395	7,958	35	6
May 23, 1877	25,000	250	44,855	1,000	11,912	11,845	10,006	4,418	7
Aug. 27, 1879	5,000	-	7,066	314	3,071	3,181	3,258	1,066†	8
Dec. 9, 1878	1,500*	-	5,336	-	-	5,336	-	1,936	9
April 16, 1880	10,000	50	34,343	8,483	15,598	6,944	28,910	38	10

* Increased to \$3,400.

† Deficit.

1883.

Oct. 25, 1872	\$20,000	200	\$48,942	\$6,239	\$13,860	\$8,900	\$28,942	-	1
Jan. 10, 1873	20,000	80	60,476	2,123	16,207	35,074	31,924	\$4,792	2
-	30,000	300	59,399	-	9,742	26,507	2,510	-	3
Mar. 17, 1875	10,000	40	31,851	2,456	8,543	20,852	18,469	2,500	4
July 14, 1877	15,000	150	17,956	1,666	4,358	4,925	5,608	52	5
May 23, 1877	25,000	250	49,154	1,000	13,109	11,045	10,545	5,260	6
Aug. 27, 1879	5,000	-	5,984	300	4,462	835	1,635	-	7
April 16, 1880	10,000	50	24,579	7,240	11,197	1,064	13,479	2,827*	8
Oct. 10, 1882	15,000	40	-	-	-	-	-	-	9

* Deficit.

PROGRESS OF CO-OPERATIVE MANUFACTURING

1884.

	NAME AND LOCATION.	Product.	Date of Organization.
1	East Templeton Co-operative Chair Co., Templeton.	Chairs, etc.	Oct. 19, 1872
2	Stoneham Co-operative Shoe Co., Stoneham.	Shoes.	Jan. 9, 1873
3	Somerset Co-operative Foundry Co., Somerset.	Stoves and castings.	Oct. 18, 1867
4	Middlesex Co-operative Boot and Shoe Co., Stoneham.	Boots and shoes.	Mar. 4, 1875
5	Kingston Co-operative Foundry, Kingston.	Stoves, machinery, and castings.	Dec. 2, 1876
6	Leonard Co-operative Foundry, Taunton.	Ranges, stoves, and hollow ware.	May 14, 1877
7	Athol Co-operative Furniture Co., Athol.	Furniture.	Aug. 5, 1879
8	American Co-operative Boot and Shoe Co., Stoneham.	Boots and shoes.	Oct. 4, 1882
9	Franklin Co-operative Boot and Shoe Co., Stoneham.	Boots and shoes.	March 30, 1883
10	Wakefield Co-operative Shoe Co., Wakefield.	Boots and shoes.	Nov. 15, 1883

Co-operative Manufacturing in Massachusetts: 1885.

There were ten co-operative manufacturing companies in operation in this State last year. A personal visit was made to each company. From the data thus obtained at first hand we present their history, with the lessons of their experience, and statistics concerning their capital, production, dividends, wages, and distribution of shares. To facilitate comparisons the untabulated facts are arranged as far as possible in numbered paragraphs. Where the present tense is used the summer of 1885 is to be understood.

The Somerset Co-operative Foundry.

The Somerset Co-operative Foundry at Somerset is the oldest co-operative manufacturing company in the State, and one of the most successful. Its history is a valuable example to workingmen capitalists of what can be accomplished by good management and a disposition to work harmoniously together. A little company of working molders bought a foundry business that had proved a failure under individual management and developed it into an important dividend-paying enterprise.

The Boston Stove Foundry commenced operations at Somerset in 1854. It was run at a loss from the start until 1867,

ENTERPRISES IN MASSACHUSETTS: 1875 TO 1884 — Concluded.

1884.

Date of Charter.	Capital Stock.	Number of Shares.	Total Assets.	Machinery.	Manufactures, Materials, and Stocks in Process.	Cash and Debts Receivable.	Debts.	Balance of Profit and Loss.	
Oct. 25, 1872	\$20,000	200	\$40,769	\$4,723	\$10,576	\$10,141	\$24,935	-	1
Jan. 10, 1873	20,000	80	59,367	3,543	16,616	32,141	29,612	\$4,000	2
-	30,000	300	65,983	6,600	19,081	22,882	6,700	4,375	3
Mar. 17, 1875	10,000	40	39,612	3,196	9,412	24,446	23,231	4,618	4
July 14, 1877	11,900	119	22,498	2,567	2,843	7,304	9,574	628	5
May 23, 1877	25,000	250	51,684	1,000	20,667	11,017	10,245	4,330	6
Aug. 27, 1879	5,000	-	7,229	2,000	1,973	524	2,297	2,732*	7
Oct. 10, 1882	20,000	80	40,165	3,863	6,283	30,019	19,787	1,023	8
April 30, 1883	10,000	40	12,576	2,064	1,594	5,418	2,576	-	9
Nov. 17, 1883	15,000	150	-	-	-	-	-	-	10

* Loss by fire and depreciation.

when William M. Bartlett of Newburyport, a molder, and molders at Somerset talked up the project of a co-operative company. An organization was effected October 18, with twenty-four stockholders. A capital of \$15,000 was paid in within thirty days and the plant of the Boston foundry was purchased for \$7,000. The first year's business amounted to \$25,000, but the balance sheet showed a net loss of \$30.87. Each succeeding year brought better fortune. The capital stock was gradually increased until in 1873 it reached \$30,000, where it remains. The value of the product rose to \$75,000 a year; soon after starting, a new cupola, boiler, engine, and blower were put in, and the capital invested, from time to time, in new flasks and patterns amounts to \$50,000, all of it earned in the business. The company has always enjoyed excellent credit and the management has been fortunate in avoiding losses through untrustworthy customers.

Statistics showing for this company the capital, product, workers, wages, distribution of stock, and dividends, follow:

CAPITAL, PRODUCT, WORKERS, AND WAGES.

CLASSIFICATION.	Number or Value.	CLASSIFICATION.	Number or Value.
Capital,	\$30,000	No. of employés not stockholders,	10
Par value of shares,	\$100	Aggregate wages per month (work- ing five days a week),	\$3,033
Highest price paid for shares when transferred,	\$145	Salaries: secretary, treasurer, and superintendent,	\$1,080
Lowest price paid for shares when transferred,	\$110	Salesman (besides expenses),	\$1,200
Value of annual product,	\$75,000		
No. of stockholders employed, . . .	30		

DISTRIBUTION OF STOCK.

No. of original stockholders,	24	Present No. of stockholders,	48
Twenty-one held 5 shares each		The company holds 15 shares	
One " 2 " "		Five hold 10 " each	
Two " 1 share "		Four " 8 " "	
		Seven " 7 " "	
		Eleven " 6 " "	
		Fifteen " 5 " "	
		One holds 4 " "	
		Four hold 2 " "	
		One holds 1 share	

DIVIDENDS.

Year.	DIVIDEND.	Year.	DIVIDEND.
1870	9 per cent, and 1 per cent paid into reserve fund.	1877	10 per cent.
1871	A stock dividend of 15 per cent.	1878	10 per cent.
1872	10 per cent.	1879	No dividend.
1873	No dividend.	1880	No dividend.
1874	10 per cent.	1881	10 per cent.
1875	No dividend.	1882	10 per cent.
1876	10 per cent.	1883	10 per cent.
		1884	10 per cent.

In the distribution of stock, the tendency toward larger holdings will be noticed. In several cases wives and brothers have bought, making more than ten shares controlled by one family. The company does not encourage outside shareholding, preferring to keep the stock in the hands of men employed in its work.

1. The product is sold in New England, New York, and the West on 30 days to six months settlements.

2. Stock-owning gives a preference in regard to employment and the sons of stockholders are preferred as apprentices.

3. The business is managed by an agent, treasurer, and foreman, subject to the directors. The management have power to discharge for unsatisfactory service, but it has never been necessary to take this direct action to get rid of an unsatisfac-

tory member. In one case, a member who was not in harmony with the company sold his stock, and afterward when he desired to repurchase he was not allowed to do so.

4. Shares for sale must be offered first to the company, and in taking in new members care is exercised to preserve the harmony of interests.

5. Most of the stockholders are workmen.

6. There is some day work, but piece, or job work predominates.

7. Wages are now paid fortnightly.

8. The prices for job work are gauged with reference to market rates elsewhere. In January, 1879, there was a reduction of twenty per cent on job work. Receipts show that some of the best molders were making, previous to the cut, \$160 a month. In 1881 ten per cent was restored. The rates for day work have not varied much. It is paid \$1.50 to \$3.75.

9. Wages are uniform, for the same kind and amount of work, between employés who are stockholders and those who are non-stockholders.

10. Frequent changes of management are not approved of. There have been but three presidents and three treasurers (two of the latter being father and son, and the other being afterward president), and but few changes in the board of directors.

A large working capital is maintained.

Members individually and the management, as such, declare that they are satisfied that stock-owning improves the quality and increases the quantity of work accomplished, and that this goes far to account for the success attained.

A large proportion of the members are middle-aged men and heads of families. Nearly or quite all are of New England stock and birth. All are of steady habits so far as to be always in working condition, and the majority are of saving habits. The few that spend as fast as they earn are usually the source of the few dissatisfactions and misunderstandings that arise.

BY-LAWS OF THE SOMERSET FOUNDRY.

ARTICLE 1. This company shall be known by the name and title of the Somerset Co-operative Foundry Company. The business of this company shall be the manufacturing of iron castings.

ART. 2. The capital stock of this company shall consist of

fifteen thousand dollars, divided into one hundred and fifty shares, of one hundred dollars each, and no person shall be permitted to hold an amount to exceed ten shares.

ART. 3. All stock shall be paid for within thirty days from the time of subscribing, and no one shall be a member of this association or entitled to vote in its meetings until they have paid an amount equal to one share.

ART. 4. The salary of the officers shall be fixed at the yearly meetings.

ART. 5. The officers of this company shall consist of a president, treasurer, and of not more than thirteen directors, who shall be styled a board of managers; they shall also have a corporation clerk and foreman.

ART. 6. The board of managers shall have power to make such prudential by-laws as they may deem proper for the management and disposition of the capital stock and business affairs of the company, not inconsistent with the laws of this State, as they may elect, and of the prescribing the duties of officers.

ART. 7. It shall be the duty of the president to preside at all meetings of the directors and stockholders; he shall make and execute all contracts as directed by the board of managers; he shall be the authorized agent of the company, and his signature when attested by the clerk shall be the bond of the company.

ART. 8. The clerk shall keep a correct record of the meetings of the stockholders, and the board of managers; he shall be chairman of the finance committee, and perform such other duties as the board of managers may prescribe.

ART. 9. The treasurer shall have charge of the funds of the company; he shall receipt for all money received by him, and deposit the same in such place as the board of managers may designate; before entering upon the duties of his office, he shall give bonds in the penal sum of five thousand dollars for the faithful performance of the duties of his office, said bonds to be acceptable to the board of managers.

ART. 10. There shall be annual meetings of the stockholders for the choice of officers held on the second Monday in January of each year, and special meetings of the stockholders may be called by the president at any time by giving seven days' notice of the time and place of, and object of, the meetings, by mail or otherwise, to all the stockholders, and in the absence or inability of the president to perform the duties of his office, it shall be the duty of the clerk upon the application of five or more of the stockholders of the company in writing, setting forth the object of the meeting, to notify the stockholders in the same manner prescribed by the president.

ART. 11. The board of managers shall hold regular meetings at least once in each month, or when ordered by the president, for the transaction of any business that may require their attention; it shall require a majority of the board to constitute a quorum for business.

ART. 12. There shall be such distribution of the profits or earnings of the association among the workmen, purchasers and stockholders as shall be described by the by-laws, at such times as therein prescribed and as often as once in twelve months, provided that no distribution shall be declared and paid until a sum equal to at least ten per cent of the net profits shall be appropriated for a contingent or sinking fund, until there shall have accumulated a sum equal to thirty per cent in excess of such capital stock.

ART. 13. Members employed by this company shall conduct themselves properly, and for the interest of the company, failing to do so they subject themselves to dismissal by the foreman or superintendent, and they shall not be again employed without the consent of two-thirds of the board of managers.

ART. 14. In taking apprentices sons of stockholders shall have the preference.

ART. 15. No member shall be considered a working member except he shall hold five shares, but may be employed by the agent or foreman.

ART. 16. This company shall not be bound to redeem any share of its capital stock within two years of the date of its corporation, and then it shall require four months' notice from any stockholder desiring the redemption of stock, but the same may be transferred at any time by any person acceptable to the board of managers.

ART. 17. Any member having shares to sell shall first offer them to the company.

ART. 18. No person not a stockholder shall be eligible to office.

ART. 19. These by-laws may be altered or amended at any regular meeting of the stockholders, but any alteration shall require a vote of two-thirds of the stockholders present.

The Kingston Co-operative Foundry.

The Kingston Co-operative Foundry originated with molders from another town who had been discharged by their employer for the reason, as they believed, that they were members of a committee appointed to wait upon him to protest against a reduction of wages. They were at that time members of the

molder's union. One of their number had previously been a member of the Somerset Co-operative Foundry Company.

Their organization was effected April 9, 1877, with a nominal capital of \$8,000 in 80 shares. The capital as reported from year to year has varied between \$8,000 and \$16,000 and is now given as \$11,900. These figures have not always corresponded with the actual cash paid in.

The company had a long and severe struggle to get established. Until within two years it had no credit and no surplus capital. Goods were sold on four months' time and collections were difficult. In the third and fourth years \$4,000 was lost through dishonest customers. Some of the men also proved unsatisfactory through unsteady habits and drinking. The impossibility of paying wages regularly caused much hardship and discontent.

CAPITAL, PRODUCT, WORKERS, AND WAGES.

CLASSIFICATION.	Number or Value.	CLASSIFICATION.	Number or Value.
Capital,	\$11,900	No. of employes not stockholders,	3 to 9
Par value of shares,	\$100	Aggregate wages per month (divided among 20 men; not working full time),	\$600
Highest price paid for shares when transferred,	\$100	Salaries: agent (per day), . . .	\$2.50
Lowest price paid for shares when transferred,	\$55		
Value of annual product,	\$20,000		
No. of stockholders employed, . .	11		

DISTRIBUTION OF STOCK.

No. of original stockholders,	36	Present No. of stockholders,	56
One held 10 shares		One holds 10 shares	
One " 8 "		One " 8 "	
One " 4 "		One " 5 "	
Six " 3 " each		Four hold 4 " each	
Ten " 2 "		Five " 3 " "	
Seventeen " 1 share each		Twenty-two " 2 " "	
		" " 1 share "	

DIVIDENDS.

Years.	DIVIDEND.	Years.	DIVIDEND.
1881	3 per cent.	1885	3 per cent.

In some cases certificates of stock appear to have been issued in discharge of wages due and unpaid.

1. The product is sold in New England on 30 days to four months' time.

2. Stockholding gives only a preference for employment.

3. The directors have power to discharge stockholders from employment.

4. A stockholder wishing to sell his shares must offer them first to the company. The directors are satisfied from their experience that in selling shares care should be exercised to secure the right sort of men.

5. Some stock is held by parties other than workmen.

6. Piece work predominates.

7. The company never had a pay day until 1885, when it began paying labor monthly, keeping ten days' wages back. Many stockholders found that as workmen they could do better elsewhere than in the employ of their own company.

8. The embarrassments of the company have made wages irregular.

9. For the same kind and quantity of work, wages of stockholding and non-stockholding employes are the same.

10. There have been four changes in the office of president, two in that of treasurer, and three in that of foreman.

The foreman is the actual manager of the business under the directors. The treasurer is connected with another manufacturing establishment in town, and was selected on that account for economy's sake.

To the inability to pay wages regularly and in full, Mr. Charles Lapham, the foreman, attributes the hard struggle of the company in a great degree. He says, "It drove many good men out of the enterprise. The establishment of the regular pay day was the best thing the concern ever did. I wish we could pay weekly. But at first payment in full was impossible. There was not enough quick capital; the concern had no credit; coal and iron bills had to be met, and goods were sold on four months' time. No concern ought to start unless it has the means to pay wages regularly. Stockholding has nevertheless had a good effect, encouraging some men who had never saved a cent to do it in this way, 'working out' their shares."

It is evident that this company has had to contend against great disadvantages. Its members had not all saved and accu-

mulated property. Some were of unsteady habits. They started with insufficient paid up capital. They did not know how to manage and there appear to have been a good many experimental changes of management. The first year the accounts were kept so unsystematically that it is now very difficult to unravel them. A permanent interest in the place was lacking. The original members were brought together from other towns and the failure to secure remuneration again scattered them. The men who have held together and kept the enterprise going under these conditions have shown a grit and persistence deserving of substantial reward.

The Leonard Co-operative Foundry.

An opportunity to purchase an idle foundry was improved by a number of molders at Taunton, April 26, 1877, to organize the Leonard Co-operative Foundry Company. The balance of profit of the first three years went into the thirty per cent reserve required by law; since then dividends have been paid. The men are mostly of American birth, of middle-age, of good habits generally, including habits of economy.

CAPITAL, PRODUCT, WORKERS, AND WAGES.

CLASSIFICATION.	Number or Value.	CLASSIFICATION.	Number or Value.
Capital,	\$25,000	No. of stockholders employed,	40
Par value of shares,	\$100	No. of employes not stockholders,	10 to 20
Highest price paid for shares when transferred,	\$100	Aggregate wages per month (divi- ded among 50 men),	{ \$3,000 to \$3,300
Lowest price paid for shares when transferred,	\$100	Salaries: treasurer,	\$1,200
Value of annual product,	\$75,000	agent,	\$1,200

DISTRIBUTION OF STOCK.

No. of original stockholders,	47	Present No. of stockholders,	51
Two held 10 shares each		One holds 5 shares	
Forty-five " 5 " "		One " 2 " "	
		Forty-nine hold 5 " each	

DIVIDENDS.

Year.	DIVIDEND.	Year.	DIVIDEND.
1881	5 per cent.	1884	6 per cent.
1882	6 per cent.	1885	6 per cent.
1883	6 per cent.		

1. The product is sold mostly in New England on 30 days' time.

2. Employment is given by preference to a stockholder if he is a competent workman.

3. The management have power to discharge a stockholder from employment. This power is lodged, however, in the board of directors, and not in the agent or foreman, and its exercise appears to be conditional on positively bad work or conduct and not on the mere fact that another man would do the work more efficiently.

4. Stockholders wishing to sell their shares are not required to offer them first to the company.

5. Some stock is held by other parties than workmen but not a large proportion.

6. Work is mostly by the piece.

7. Wages are paid monthly.

8. In June, 1885, only two men earned as little as a dollar a day, the majority made from \$1.25 to \$3.50 a day, while a few made \$4.00 a day. A cut of ten per cent was made three years ago, but it was restored after a few months.

9. Wages are uniform, for the same amount and quality of work, between the stockholding and non-stockholding employés.

10. The company has had but two presidents and two treasurers.

The effect of stockholding upon the amount and quality of work is marked. The men take pains to do everything well and have a pride in the reputation which their goods hold in the market.

The company believe in permanence of management, but there is a strong feeling among the members against a large salary roll.

The men consider their experiment a success. There are occasional misunderstandings, and now and then an individual thinks that he could manage things better if he could have his own way, but there is in the main harmonious co-operation.

The East Templeton Co-operative Chair Company.

Skilled workmen, thrown out of employment by the failure of two wood-working shops in which they were employed, and

unwilling to leave the town where most of them owned homes, organized the East Templeton Co-operative Chair Company, October 19, 1872, with a capital of \$10,000 in 100 shares. They bought out a sound concern and put in a thousand dollars' worth of new machinery. In 1873 their assets were reported as \$21,059 and their liabilities as \$11,059. In that year the capital was increased to \$15,000, and in 1881 to \$20,000.

This company made a good start. It had excellent credit and its goods immediately found a ready market. "They sold themselves," said one of the men, "because we were all interested and did good work." There was no trouble with unsatisfactory men. They were all of New England birth and descent. The only bad luck for eight years was a loss of \$3,000 through dishonest customers.

On October 9, 1880, the shop and contents were destroyed by fire. The loss wiped out the capital of \$15,000. With \$5,000 insurance money, \$5,000 more borrowed on mortgage, and \$4,000 more borrowed on personal security a new factory was built and equipped, and the business re-established. All but \$1,500 of the \$4,000 has been repaid and the total loss by the fire has been made good to within \$2,000. There has never been a time when the factory has not been run ten hours a day when daylight would permit. It is never artificially lighted in winter.

CAPITAL, PRODUCT, WORKERS, AND WAGES.

CLASSIFICATION.	Number or Value.	CLASSIFICATION.	Number or Value.
Capital,	\$20,000	No. of stockholders employed, . . .	14
Par value of shares,	\$100	No. of employes not stockholders, . . .	9 or 10
Highest price paid for shares when transferred,	\$100	Aggregate wages per month, . . .	\$940
Lowest price paid for shares when transferred,	\$100	Salaries: agent (per day), . . .	\$1,151
Value of annual product,	\$45,000	treasurer,	\$2.75
	to	clerk (per month),	nothing
	\$50,000		\$30

DISTRIBUTION OF STOCK.

No. of original stockholders, 24	Present No. of stockholders, 38
Four held 1 share each	The stock is not all sold
Five " 2 shares "	Three hold 1 share each
Two " 3 " "	One holds 1½ shares
Four " 4 " "	Six hold 2 shares each
Six " 5 " "	Five " 3 " "
One " 6 " "	Two " 4 " "
Two " 6½ " "	Six " 5 " "
The company held 15 shares	Four " 6 " "
	One holds 6½ " "
	Five hold 7 " "
	One holds 8 " "
	One " 9 " "
	Three hold 10 " "

DIVIDENDS.

Year.	DIVIDEND.	Year.	DIVIDEND.
1872	6 per cent.	1879	5 per cent.
1878	5 per cent.	1882	6 per cent.

1. The product is sold mainly at the West on 30 to 90 days' time.

2. Stockholding does not create a right to employment.

3. The agent has power to assign work, and hire and discharge help without a vote of the directors.

4. A stockholder wishing to sell his shares is not required to offer them first to the company. There was at one time a by-law that a stockholder should not sell without the consent of the directors. It was dropped.

5. All the stockholders are men who work for day wages in this or some other industry.

6. Work is mostly by the piece. Some of the men take "jobs" and employ assistants on their own account.

7. Wages are paid once a month. There is a by-law giving the company the option to pay a shareholder his wages in full, or, with his consent, to retain a part of the amount due at six per cent interest. A working capital of \$9,000 has been held in this way. During the last year wages have been paid in full.

8. Prices for work are gauged by the rates prevailing in other shops. There have been several reductions of wages. Within two years there has been one cut of 25 per cent and one of 15 per cent.

9. For the same kind and quantity of work, wages of stockholding and non-stockholding employés are the same.

10. There have been but few changes in the board of directors. Three men have held the office of president and three that of treasurer. The treasurer is also the agent.

No trouble has been caused by jealousies or misunderstandings. The stockholders are all, as formerly, of New England blood.

The management regard a large working capital as a prime condition of success. A thousand dollars for every man's product would be none too much. They make it a rule to pay all bills at 30 days and thereby save a large sum in discounts.

The Athol Co-operative Furniture Company.

The Athol Co-operative Furniture Company was formed to make employment for themselves by men who had been connected with wood-working shops and had lost their jobs. They organized August 5, 1879, and started with a nominal capital of \$2,500, and only just enough paid in to comply with the law. They secured orders readily and were fortunate in avoiding losses. The men were steady, but fifteen of the twenty-five were green hands. Through their imperfect work and by paying too high wages the company lost \$2,000 the first year. In the fall of 1882 the shop was destroyed by fire, with a loss of \$3,000 in stock and machinery. Though a new start was made and a good trade secured as before, the company has never been prosperous. Though working on orders only it has generally worked ten hours a day except in winter, when no work by artificial light is attempted. Among the stockholders are two foreigners, all others are of American birth.

CAPITAL, PRODUCT, WORKERS, AND WAGES.

CLASSIFICATION.	Number or Value.	CLASSIFICATION.	Number or Value.
Capital,	\$5,000	No. of employés not stockholders,	3 to 5
Par value of shares,	\$100	Aggregate wages per month:	
Highest price paid for shares when transferred,	\$100	(highest, to 26 men),	\$933
Lowest price paid for shares when transferred,	\$100	(lowest, to 10 men),	\$280
Value of annual product,	\$15,000*	Salaries: agent (per day),	\$2.00
No. of stockholders employed,	8 to 10		

* The value of annual product was, at one time, \$30,000.

DISTRIBUTION OF STOCK.

No. of original stockholders, 25	Present No. of stockholders, 33
All held one share each	Twenty hold 1 share each
	Twelve " 2 shares "
	One holds 5 " "

DIVIDENDS.

None.

1. The product is sold in New York and locally on 30 days.

2. A stockholder has a right to employment when there is work enough, if he is a capable workman.

3. A vote of the directors is necessary to discharge a stockholder from employment. It has never been necessary to take this step, a reprimand being always sufficient.

4. A stockholder wishing to sell is not required to offer his shares to the company, but a new purchaser must be acceptable to the directors to secure work.

5. All the stockholders are workers for wages in some employment.

6. Work is partly by piece and partly by the day.

7. Wages have always been paid on the 15th of the month, but not always in full. It was a rule at one time to pay half and to give notes for half. When the capital was increased, \$8.33 a month was deducted from each man's pay, so that at the end of the year he had paid for a share.

8. The intention is, when possible, to pay stockholders five to ten per cent higher wages than prevail in other shops in town for like work. Wages have varied a good deal. When a smart man has made as much as \$3 or \$4 a day it has been customary to cut down the price of his job, to "even things." Men so treated have sometimes stepped out and found work elsewhere.

9. Wages of stockholders and non-stockholders are not the same for the same kind and quantity of work. Non-stockholders are hired as cheaply as possible.

10. There have been many changes of directors. Three men have held the office of president, four that of agent, and but one that of treasurer.

Insufficient capital, and too many men, who were not well qualified for co-operation, have been the great disadvantages of this company. The agent believes that with \$10,000 they could have made a success. Lumber has cost \$2 a thousand more than it would have done could settlements have been made more promptly. As for the men, the agent says: "My experience is that a co-operative team is a hard team to drive." It has been necessary to get rid of some men with whom it was impossible to agree. Some of the stockholders would prefer to be organized as a general corporation. One says: "A business can be best managed by a few men. There are some things that directors must know that outsiders had better not know, and co-operative stockholders sometimes publish things that ought not to be published. It might be different if we were making money."

The Stoneham Co-operative Shoe Company.

There are four co-operative boot and shoe manufacturing companies in the town of Stoneham. Their business is so extensive, and they have been so successful, that they may be said to constitute the chief industrial feature of the place. The first one established was the Stoneham Co-operative Shoe Company, organized December 4, 1872. The project originated with men who were temporarily unemployed and who conceived that they could do better than to continue to work for wages only. A capital of \$10,000 was subscribed and taken in 40 shares. This was increased to \$15,000 in 1880, and to \$20,000 in 1881. Many difficulties and misapprehensions and some misrepresentation were encountered in getting started. By some parties with whom business relations were necessary or desirable, the enterprise was believed to be controlled by a trade union or to be managed in the trade union interest. But the management was capable and vigorous, the first year was a prosperous one, and from that time on the financial success of the company has been remarkable. The shop has usually been run on full time, with the exception of the brief summer vacation which is customary in the Stoneham shoe factories. The stockholders are of all nationalities, and they have always worked together harmoniously.

CAPITAL, PRODUCT, WORKERS, AND WAGES.

CLASSIFICATION.	Number or Value.	CLASSIFICATION.	Number or Value.
Capital,	\$20,000	No. of stockholders employed:	
Par value of shares,	\$250	males,	20
Highest price paid for shares when transferred,	\$400	females,	5
Lowest price paid for shares when transferred,	\$250	No. of employes not stockholders:	
Value of annual product,	\$150,000	males,	15 to 20
		females,	20
		Aggregate wages per month,	{ \$2,500 to \$2,800
		Salaries: agent,	\$1,500
		treasurer,	\$300
		bookkeeper,	\$600

DISTRIBUTION OF STOCK.

No. of original stockholders,	31	Present No. of stockholders,	57
One held 4 shares		One holds 4 shares	
One " 3 "		Four hold 3 " each	
Four " 2 " each		Twelve " 2 " "	
Twenty-five " 1 share "		Forty " 1 share "	

DIVIDENDS.

Year.	DIVIDEND.	Year.	DIVIDEND.
1873	7.8 per cent.	1879	17 per cent.
1874	40 per cent.	1880	15 per cent.
1875	2½ per cent.	1881	15 per cent.
1876	18 per cent.	1882	21 per cent.
1877	—	1883	20 per cent.
1878	7½ per cent.	1884	6 per cent.

1. The product is sold to the Western trade on sixty days' credit.

2. Stockholding does not give a right to employment, and in actual practice a stockholder is given employment only when he is the right man to do a certain work. A better workman not a stockholder would be given the place.

3. The management is in the hands of the directors and the agent, the former looking closely after details. The agent has power to discharge all help, except stockholders; their cases must go before the directors.

4. When a stockholder wishes to sell his shares he is not required first to offer them to the company.

5. With one exception all the original stockholders were manual workers in the shoe industry. The stock is still held largely by workingmen, but many stockholders work in other factories, some in other parts of the State, and some in other States.

6. Work is by the piece mainly.

7. Until two years ago all labor was paid regularly once a month. At present stockholders are paid once a month and other help once a week.

8. The wages of lasters are dictated by the lasters' union, to which resistance is never offered. The scale of wages for other work is determined by taking the average of several other shoe factories, not co-operative.

9. Wages are uniform, for the same kind and quantity of work, between stockholders and non-stockholders.

10. There have been few changes in the board of directors since the company began operations, and frequent changes of management are considered unwise. There have been in thirteen years four presidents, two treasurers, and three agents. Responsibility with considerable powers is considered necessary in the management. Three to five directors would be considered enough.

While salaries must necessarily be low in co-operative associations, Mr. J. G. Green, the treasurer of this company, thinks that it is best to get a good man for every responsible position and pay him what he is worth. "It does not pay to keep a poor man because he is cheap." The treasurer has large responsibilities, having to endorse notes, etc., and \$300 for his services is small pay.

Mr. Green believes that ample capital is an indispensable condition of success in co-operative shoe making. He estimates that a concern must have \$2,000 active capital and good credit for every case of shoes made for the jobbing trade, turning the money once in sixty days. In the retail trade it is necessary to double this estimate and figure closer. A great misapprehension exists among wouldbe co-operatives as to the amount of capital necessary. Delegates visit Stoneham to make inquiries, expecting to employ thirty or forty men on a capital of \$2,000 to \$3,000.

*The Middlesex Co-operative Boot and Shoe Company,
Stoneham.*

Dull times and lack of work were assigned as the reason for the organization of the Middlesex Co-operative Boot and Shoe Company, on February 23, 1875. These would seem to have

been about as unfavorable antecedents as an industrial enterprise could have ; nevertheless, the Middlesex has been a success in every way, fully rewarding the faith of the unemployed, but practical, men who invested their savings in it, believing that the experiment which had shown such gratifying results in the Stoneham co-operative shop could be repeated with like good fortune. The capital stock at first was \$10,000 in forty shares. It was increased December 31, 1883, to \$15,000 and sixty shares. For some time the company had hard work to get credit. Nearly every party of whom materials were bought inquired suspiciously about co-operation and was in doubt whether to trust or not. For three successive years a loss was made yearly of \$800 or more in uncollectible bills. The third year \$1,800 was lost through one fraudulent concern that did business in different States under three different names.

CAPITAL, PRODUCT, WORKERS, AND WAGES.

CLASSIFICATION.	Number or Value.	CLASSIFICATION.	Number or Value.
Capital,	\$15,000	No. of stockholders employed :	
Par value of shares,	\$250	males,	21
Highest price paid for shares when transferred,	\$400*	females,	3
Lowest price paid for shares when transferred,	\$250	No. of employés not stockholders :	
Value of annual product,	\$90,000	males,	6
		females,	12
		Aggregate wages per month,	\$1,755
		Salaries : agent,	\$1,500
		treasurer,	\$200
		bookkeeper (per month),	\$15

* A share brought \$280 at auction, when an estate was settled.

DISTRIBUTION OF STOCK.

No. of original stockholders,	39	Present No. of stockholders,	47
Each held 1 share		Thirteen hold 2 shares each	
Three in partnership held 1 share		Thirty-four " 1 share "	

DIVIDENDS.

Year.	DIVIDEND.	Year.	DIVIDEND.
1876	9 per cent.	1880	10 per cent.
1877	An assessment of \$26.85 per share to meet losses caused by failures of customers.	1881	10 per cent.
1878	5 per cent.	1882	20 per cent.
1879	4½ per cent.	1883	25 per cent.
		1884	20 per cent.

1. The product is sold at Boston and in all the Northern States on ninety days' credit.

2. Stockholding does not give a right to employment.

3. The agent manages the business in detail, buying and selling, hiring and discharging, but subject to the directors.

4. There is a by-law requiring a stockholder who wishes to sell to offer his shares first to the company, but it is a dead letter.

5. With very few exceptions the stockholders are employed in the shoe industry.

6. All work is by the piece.

7. The company has always had a regular pay day, the first Friday of the month.

8. The rate of wages except for the lasters, whose prices are made by the union, is determined by striking an average of the wages paid by five other shops.

9. Wages are uniform, for the same kind and amount of work, between stockholding and non-stockholding employes.

10. There have been three successive presidents, but one treasurer, three agents, and but few changes in the board of directors, most of the original directors being yet in office.

Mr. Luther White, treasurer of the company, said that he did not think a large capital was essential to success in co-operative manufacturing. He did not think it necessary or important that stockholders should be of one nationality. In the Middlesex there are American born, Irish, and French Canadians. But co-operators must be of good habits, economical and saving. They must belong to the place and have a permanent interest in it. Most of the Middlesex stockholders own their homes. Many changes of management will have a bad effect. The present agent has been exceptionally successful, but when the change from his predecessor was made customers said it would ruin the business, illustrating the feeling among business men that changes of management are unfavorable. The men who have managed the affairs of the Middlesex came from the bench and had not been trained in business.

Mr. White complained of unfair discrimination in taxation, which hurts co-operative enterprises. Many of the shoe manufacturers with which the co-operatives must compete are private partnerships, rendering no account of capital and condition to

the State and making their own figures of valuation. The co-operative concerns, being corporations, are taxed on the full amount of their capital stock.

*The American Co-operative Boot and Shoe Company,
Stoneham.*

The American Co-operative Boot and Shoe Company was organized October 10, 1882, with a capital of \$10,000 in forty shares. Its projectors were mostly middle-aged men who had saved money out of wages. It was a distinctive feature of this enterprise that the power to hire and discharge help and assign work regardless of stockholding should be absolute. The first year was financially successful; the second year the failure of a creditor caused a deficit. The company has enjoyed good credit from the first. The capital was increased April 3, 1883, to \$20,000 and August 20, 1884, to \$30,000. No certificate of stock is issued until paid for in cash. If an employé wishes to pay for a share by instalments he must get some one to take and pay for it for him.

CAPITAL, PRODUCT, WORKERS, AND WAGES.

CLASSIFICATION.	Number or Value.	CLASSIFICATION.	Number or Value.
Capital,	\$30,000	No. of stockholders employed:	
Par value of shares,	\$250	males,	11
Highest price paid for shares when transferred,	\$265	females,	11
Lowest price paid for shares when transferred,	\$250	No. of employés not stockholders:	
Value of annual product,	\$50,000	males,	14
		females,	9
		Aggregate wages per month,	\$1,900*
		Salaries: agent,	\$900

* Estimated.

DISTRIBUTION OF STOCK.

No. of original stockholders,	38	Present No. of stockholders,	91
Two held 2 shares each		Three hold 4 shares each	
Thirty-six " 1 share "		One holds 3 " "	
		Thirteen hold 2 " "	
		Seventy-four " 1 " "	

DIVIDENDS.

None.

1. Goods are made for the retail trade only, and for the Western trade mainly.

2. Stockholding confers neither right nor preference to employment.

3. It was the conviction of the projectors of this company that the best results had been missed in some previous co-operative undertakings through a lack of entire freedom to hire and discharge help solely on grounds of efficiency. Stock was marketed, therefore, with the distinct understanding on the part of purchasers that it was an investment merely and not a claim to any other advantage whatever. The management is more than satisfied with the wisdom of this policy. Labor is regarded in this shop with an eye as single to its economic value as in the most absolutely governed corporation.

4. Stock for sale must be offered first to the company, and a purchaser must be approved by the board of directors. This power is exercised in this company. There is not much mixture of nationalities among the stockholders. The majority of them are American born.

5. Nearly all the stockholders are workers for wages in various shops.

6. Work is mostly by the piece.

7. Wages have been paid always on the first Friday of each month and advances are made if asked for.

8. About six months after the company began operations the lasters demanded an advance, which was granted. July 1, 1885, a second demand of five per cent was conceded. None of the stockholding employés are members of the union.

9. There is no discrimination in wages between stockholding and non-stockholding employés.

10. There have been no changes in management since the company was organized.

The American has a good location and a well adapted building for its factory, for which \$8,000 was paid. At the time of our visit it was promising to become a success in every way.

BY-LAWS OF THE AMERICAN BOOT AND SHOE COMPANY, STONEHAM.

SEC. 1. This Association shall be known as The American Co-operative Boot and Shoe Company.

SEC. 2. Any person approved by the board of directors shall,

by taking one or more shares of stock of this company and paying for them, become a member.

SEC. 3. The regular meetings of this company shall be held quarterly as follows, viz: the third Wednesday in November, February, May and August, at such time and place as the board may direct. Provided circumstances occur to render it expedient, the president, with the consent of a majority of the directors, may call a meeting on a prior or subsequent day.

SEC. 4. Special meetings of the company may be called by the president, with the consent of a majority of the directors.

The president shall cause special meetings of the company to be called upon a written request, signed by ten members of the company.

SEC. 5. The officers of this company shall consist of a president, clerk, treasurer, and three directors, who shall constitute the board of directors for the company.

All the officers of this company shall be elected annually at the regular meeting in November, by written or printed ballots, by the stockholders, except the president, who shall be chosen by the directors.

SEC. 6. There shall be chosen at each quarterly meeting two auditors, to audit the accounts of the company, and attest their correctness.

SEC. 7. It shall be the duty of the president to preside at all meetings of the company and of the board of directors; preserve order therein, put all questions, announce all decisions, and in case of an equal division, to give the casting vote. He shall receive and keep all bonds required of the officers of the company, and sign all documents issued by the board of directors, and perform all other duties required of him by the by-laws.

SEC. 8. It shall be the duty of the clerk to attend all meetings of the company and of the board of directors.

To make and keep a correct record of the same, which shall be open to the inspection of any member, serve such notices as appertain to his office, or as he may be directed by the company or board of directors, file all bills, reports and other documents ordered to be filed, attend to all correspondence, and perform such other duties as appertain to his office.

SEC. 9. It shall be the duty of the treasurer to collect and receive all monies due the company from members and others, giving his receipt therefor, and deposit the same at such time and such place as the board of directors shall designate.

He shall keep a correct list of the names and residence of all

members, and keep a correct account between the company and its members.

He shall draw all monies for the payment of claims against the company, under the direction of the board of directors.

He shall give bonds in the sum of five thousand dollars, to be approved by the board of directors, for the faithful performance of his duties, and shall at the expiration of his term of office deliver to his successor all monies, books, papers and vouchers in his possession belonging to the company.

SEC. 10. It shall be the duty of the directors to have the general supervision of the affairs of the company, and pursue such measures, and appoint such agents, as in their judgment is for the best interest of the company.

SEC. 11. The capital stock of this company shall be held in shares of two hundred and fifty dollars each, and each member may hold from one to four shares.

SEC. 12. From the net profits, after paying all the expenses of the company, not less than ten per cent shall be set aside for a sinking fund.

The remainder shall be divided among the members, according to the number of shares each member may hold.

SEC. 13. Any member wishing to transfer any shares of this company shall first offer the same to the board of directors, to be transferred under their direction.

SEC. 14. After a vote to increase the capital stock of the company, no certificate of stock shall be issued to any person not a member, until such stock has first been offered to the members of the company who are eligible, and shall be offered for sale immediately after such offer.

SEC. 15. At any meeting of the directors three members shall constitute a quorum, and at all meetings of the company nine stockholders shall constitute a quorum for the transaction of business.

SEC. 16. Notices of all meetings shall be given by the clerk, according to the directions of the board of directors.

SEC. 17. These by-laws may be altered or amended by a two-thirds vote of the stockholders, present at a meeting called for that purpose.

The Franklin Co-operative Boot and Shoe Company, Stoneham.

The youngest of the Stoneham co-operative enterprises is the Franklin Co-operative Boot and Shoe Company, organized March 30, 1883. Its stockholders were men thrown out of work by failures in town. Much trouble and delay were experienced

in getting started, the treasurer elected failing to collect the capital subscribed. It was finally necessary to ask him to resign. He did so, surrendering his stock. His successor collected \$7,000, but was unable to lease a building. Finally a building was bought for \$3,500 and operations were begun in January, 1884, with a very small working capital, a fact that has made subsequent progress difficult. The capital was nominally \$10,000 in forty shares. It has been increased, nominally, to \$20,000, but the shares are not yet all sold. Orders were hard to get at first and for the first six months the shop was run only eight hours a day. At the time of our visit in the summer of 1885, the company had more orders than it could fill with the quick capital at command and for a year had been running on full time, except the customary vacation of ten days.

CAPITAL, PRODUCT, WORKERS, AND WAGES.

CLASSIFICATION.	Number or Value.	CLASSIFICATION.	Number or Value.
Capital,	\$20,000	No. of stockholders employed :	
Par value of shares,	\$250	males,	20
Highest price paid for shares when transferred,	\$283	females,	6
Lowest price paid for shares when transferred,	\$250	No. of employes not stockholders :	
Value of annual product,	\$50,000	males,	2 to 4
		females,	8
		Aggregate wages per month, . .	\$1,500
		Salaries: agent,	\$1,000

DISTRIBUTION OF STOCK.

No. of original stockholders,	37	Present No. of stockholders,	69
Three held 2 shares each		Two in partnership hold 3 shares	
Thirty-four " 1 share "		One holds 3 shares	
		Two hold 2 " each	
		All others " 1 share "	

DIVIDENDS.

None.

1. Goods are sold in the Western States on 30 days, five per cent off for prompt payment.

2. Stockholders have a first right to employment and the expectation is that they will be given employment if possible. But if a stockholder is not capable of doing acceptable work some one else is employed.

3. The agent has authority to dismiss stockholders from employment, without a vote of the directors.

4. If a stockholder wishes to sell he must first offer his shares to the company.

5. With the exception of a few shares the stock is owned by workpeople.

6. Work is by the piece.

7. The first Friday of the month is pay day.

8. The average prices paid for work by non-co-operative shops are adopted and the pay of lasters is dictated by the union.

9. Wages are uniform between stockholding and non-stockholding employés.

10. There have been no changes of management since the company began operations.

Mr. James Grant, treasurer of the company, said that he thought the Franklin had succeeded as well as possible under the circumstances. It produces a better shoe than non-co-operative shops because the employés take an interest in their work. This is what sustains co-operation in Stoneham. The Franklin could double its business if it had four or five thousand dollars more of quick capital. Goods are manufactured on a very narrow margin. The company at one time lost \$500 in six months through inability to secure the discount of its bills. In shoe findings the per cent off for prompt payment at 30 days runs from five to fifteen, averaging ten. The inability of some men to understand this condition of success is one of the difficulties of co-operation. Stockholders too often expect to do a big business on a small capital, and when they find that it is not being done some of them think that they could manage affairs much better. This class of men and women is not a large factor, however.

The Wakefield Co-operative Shoe Company.

An opportunity to buy a small shoe factory and the success of co-operation at Stoneham suggested the Wakefield Co-operative Shoe Company, which was organized November 15, 1883, with a capital of \$15,000 in 150 shares. The company started in a dull time but did a larger business the first year than subsequently, working full time the first year, but not the second.

It paid cash for all supplies, and took the discounts. The second year \$1,000 was lost in uncollectible bills. The stockholders are of American, French, and Scotch nationalities. There has been no trouble through jealousies, misunderstandings, or bad habits.

CAPITAL, PRODUCT, WORKERS, AND WAGES.

CLASSIFICATION.	Number or Value.	CLASSIFICATION.	Number or Value.
Capital,	\$15,000	No. of stockholders employed :	
Par value of shares,	\$100	males,	11
Highest price paid for shares when transferred,	\$100	females,	1
Lowest price paid for shares when transferred,	\$100	No. of employés not stockholders :	
Value of annual product,	\$35,000	females,	8
		Aggregate wages per month,	\$784
		Salaries : aggregate,	\$2,000
		largest to one man,	\$900

DISTRIBUTION OF STOCK.

No. of original stockholders,	84	Present No. of stockholders,	80
Three hold 6 shares each		Three hold 6 shares each	
Three " 5 " "		Four " 5 " "	
One " 4 " "		Eleven " 3 " "	
Ten " 3 " "		Seventeen " 2 " "	
Sixteen " 2 " "		Forty-five " 1 share "	
Fifty-one " 1 share "			

DIVIDENDS.

1884,	8 per cent.
-----------------	-------------

1. The product is fine goods exclusively, and is sold in New England on sixty days' credit.

2. Stockholding creates a preference for employment, workmanship being satisfactory.

3. The agent, with the authority of the directors, has power to hire and discharge and assign work, regardless of stockholding, and there has never been any trouble on this account.

4. Stock for sale must be offered first to the company. The rule is enforced.

5. About one-half of the stockholders are workers for wages in the shoe industry.

6. Most of the work is by the piece. Some employés take jobs and employ assistants on their own account.

7. In 1884 wages were paid every Saturday night ; in 1885

fortnightly. It has never been the practice to withhold any part of wages due.

8. Wages are governed by the average prices paid elsewhere. There is no trade union influence on wages here, as at Stoneham, though lasters belong to the union. Prices for work have not been changed since the company started.

8. Stockholding and non-stockholding employés are paid the same for equal work.

10. There have been but few changes in the board of directors; but one treasurer and agent, and three presidents.

The managers are satisfied that stock-owning makes good workers in every department. Stock-owning workers waste nothing, in a dull time an important item, and their work is painstaking. Customers have never found any fault with the quality of work done by this company.

The importance of a large working capital is emphasized here, as elsewhere, and the same complaint of burdensome taxation is made that was made by the Middlesex company at Stoneham.

The essential points contained in the statistical statements already given for each company are presented in the following summary, for purposes of comparison :

SUMMARY.

NAME OF CO-OPERATIVE ASSOCIATION.	Capital.	Annual Prod- uct.	Stockholders Employed.		Employés not Stock- holders.		Indi- vidual Wages per Month.	Aggre- gate Salar- ies per Year.	Aver- age Divi- dends.
			Males.	Fe- males.	Males.	Fe- males.			
American Shoe Co., . . .	\$30,000	\$50,000	11	11	14	9	\$43	\$900	Per cent.
Athol Furniture Co., . . .	5,000	15,000	8	-	3	-	32	626	-*
E. Templeton Chair Co., . .	20,000	45,000	14	-	9	-	44	1,220	1.83*
Franklin Shoe Co., . . .	20,000	50,000	20	6	2	8	41	1,000	-
Kingston Foundry Co., . . .	11,900	20,000	11	-	9	-	30†	782	0.75
Leonard Foundry Co., . . .	25,000	75,000	40	-	10	-	60	2,400	3.62
Middlesex Shoe Co., . . .	15,000	90,000	21	3	6	12	42	1,880	10.35
Somerset Foundry Co., . . .	30,000	75,000	30	-	10	-	76	2,280	7.60
Stoneham Shoe Co., . . .	20,000	150,000	20	5	15	20	42	2,400	14 15
Wakefield Shoe Co., . . .	15,000	35,000	11	1	-	8	39	2,000	8.00

* Losses by fire.

† Working part time.

In two of these ten co-operative companies there is a strong opposition to a mixture of nationalities, and care is taken to keep the stock in the possession of men and women of American birth. In three other companies it has happened, without any distinct effort to have it so, that all or most of the members

are of American birth. In the other five, nationalities are indiscriminately mingled. The managers of these latter affirm that the fact causes no inconvenience and that success is in no way impaired by it.

There is a more general agreement that co-operative stockholders should be picked men in regard to character and efficiency. One dissatisfied man can make an amount of trouble altogether disproportionate to his investment.

One of the "outs" of co-operation, in the experience of one agent, is that if business is dull unemployed stockholders think it hard that they cannot have work. Again, in dull times it would often be economy to work in a cheap man to do certain kinds of work while learning the trade, but it will hardly do to substitute the cheap man for a stockholder.

Another agent expressed the judgment that the fewer female stockholders in the stitching room of a shoe factory the better. They are carried away, he said, by the idea that as stockholders they should be permitted to do as they please; and they are too independent. In the stitching room it is desirable, to economize machinery, to have stitchers change off, doing one kind of work a part of the day, and something else at other times. If they are stockholders young women object. No other agent made this criticism, but on the contrary one said that the trouble would not arise under good management.

We have been unable to obtain much definite information about co-operative companies that have failed. In one case the whole capital was paid in by a small minority of the members, the majority giving personal notes for their shares. The notes were never paid and the business was reorganized as an ordinary corporation. In another case there were but few stockholders and the shares were of the par value of \$500. The company soon reorganized as an ordinary corporation. In most of the remaining cases failure was due to insufficient capital or to disagreements among the members.

SUMMARY AND CONCLUSIONS.

We have found three general types of profit sharing: (1) profit sharing without wages; (2) profit sharing in connection with wages; (3) profit sharing in connection with wages and stock-owning by workmen.

Profit sharing without wages is of limited application. In the majority of industries the elements of certainty and calculability attaching to stipulated wages commend the latter, as a form of labor reward, to both workmen and employers. Yet profit sharing as a substitute for wages has points of superiority. We found that while in the Gloucester fisheries the labor reward is subject to extreme fluctuations, it is adjusted with nicety to varying degrees of efficiency. It powerfully stimulates industry and skill and sifts out incompetent men. For this reason, and because the crews, no less than the vessel owners, believe that the share system is better for all concerned than wages, it is probable, though not inductively demonstrable, that in this industry the labor reward per capita is somewhat greater under the existing system than it would be under a system of wages.

Profit sharing in connection with wages has been found applicable to manufacturing, transportation, mercantile business, mining, and agriculture.

Under this form of profit sharing there are two plans of dividing profits between capital and labor: in one a percentage of profits is allotted to labor after an initial dividend has been assigned to capital; in the other a percentage of whatever profit there may be is allotted to labor without first assigning a fixed percentage to capital. The latter has the merit of giving something to labor in addition to its wages when there are any profits at all. The former may fail, in years of small profits, to afford even a very small dividend to labor, making the bonus so irregular and uncertain that its educative value is in a degree impaired.

Under each of these plans of dividing profits between capital and labor may occur two plans of apportioning the dividend to labor among employes: division by classes, and division solely on the basis of wages earned. Division among classes on a sliding scale involves the assumption that the difference of values of men's services is greater than the difference of their wages. Jealousies and dissatisfaction are more likely to appear when the division is by classes than when it is on the basis of wages earned.

Lastly, under either of the foregoing plans of division participation may be either immediate, through a ready money

dividend ; or deferred, through a savings account or an annuity ; or a combination of these two. In the American attempts that we have recorded there has been no deferred participation. On the European continent a combination of deferred with immediate participation is the rule. Deferred participation encourages saving and helps to secure permanency of service.

Three of the six American industrial partnerships, that we have described, have been successful in accomplishing their main purpose. One of these, Peace Dale, did not show the results looked for at the end of the first year. It was made a success by perseverance and painstaking explanation to the employés, year after year, of the conditions on which success or failure would depend. In two cases of failure no attempt was made to explain these conditions. The employés were never given distinctly to understand that their bonus would depend on their own conduct. In one of the unsuccessful experiments the division of the labor dividend by classes, and without regard to wages earned, gave rise to envyings and complaints of unfairness. Only one experiment failed through the direct fault of the employés.

As a means of increasing the worker's income, profit sharing has given, in the Pillsbury mills, the most remarkable results of which we have any knowledge. The amount divided one year by Lister Brothers was a large addition to wages. In the remaining cases the bonus, though not a large percentage of wages, has not been insignificant.

From the data gathered from all sources we derive these cardinal principles of industrial partnership :

Participation by workmen in profits in addition to wages is a true harmonizer of the interests of capital and labor. It does in fact identify the interest of the employé with the interest of the employer. It converts the industrial association of employer and employés into a moral organism, in which all the various talents, services, and desires of the component individuals are fused into a community of purpose and endeavor.

The dividend to labor is not usually an increase of pay, services remaining the same, but a form of extra pay for extra services and an inducement calling them out.

The extra services called out, and the manner in which they are called out, constitute an invaluable educational discipline.

They develop the whole group of industrial virtues : diligence, fidelity, caretaking, economy, continuity of effort, willingness to learn, and the spirit of co-operation.

When, as must sometimes happen, the dividend to labor is enlarged by the adventitious profit accruing from an unusually favorable state of the market, the participation of labor is not an injustice to capital. The reward the capitalist receives in this case is the reward of risk solely ; it is liable to be cut down by the losses of unfavorable years. The risk that the employé runs is an element that receives imperfect recognition under the simple wages system, but which gets its meed of reward under profit sharing. If the business is unprofitable wages will be reduced and employment may cease altogether. All the superior diligence and fidelity that the employé may have put into his work in the expectation of promotion and larger wages has been thrown away. He took his risk as the capitalist took his, both hoping to increase their rewards and both have lost. Is it any more than fair that when the capitalist is recompensed for his risk and losses the employé should be recompensed for his ?

Under profit sharing superior efficiency is relatively sure of proportionate reward. If it be argued that whatever addition to his reward the worker receives through profit sharing he would ultimately receive under a perfect competition in increased wages, the facts nevertheless remain that the worker will get no increase of pay unless he earns it ; that the average worker cannot always be made to see that by the action of competition increased efficiency will bring him higher wages, and that failing to see this he is not moved to cultivate efficiency ; that under profit sharing he does see the connection between efficiency and reward, and that, therefore, the industrial education is more perfect and the probability of increased reward is greater.

Industrial partnership will not run itself. The mere paying over of so much money as a share of profits apart from conditions, and without watchfulness, will not call out the extra service. The dividend will be regarded as a present and may be demoralizing rather than beneficial.

In general, success in profit sharing depends on a definite understanding, insistence that the bonus must be earned and

not expected as a present, and patience in working and waiting for results.

Profit sharing in connection with stock-owning is found in two forms: in one, profits are divided partly on the basis of capital invested, partly on the basis of wages paid for labor; in the other capital is the sole basis of division.

The English co-operative manufacturing societies generally pay a bonus to labor; they are true industrial partnerships. When we began this investigation we expected to find the same true of some of the co-operative manufacturing companies of this State; we have not found it true of one. Nevertheless, we hold that these companies are examples of profit sharing, the dividend divided on capital, however small it may be, containing an increment that is a reward of labor.

Co-operative manufacturing corporations have been successful in this State in the degree that they have conformed to the conditions to which other manufacturing corporations find it necessary to conform.

It has been necessary to give to managers large powers and to maintain unity and continuity of management.

It has been necessary to subordinate the labor relation to the stockholder relation. The best success is attained when the management has power to hire and discharge labor with sole reference to efficiency and regardless of any supposed claim to employment constituted by stockholding. The same result is obtained in some cases, as at Somerset, by practically exercising the power to control transfers of stock. Where one power is not exercised the other must be.

This condition probably explains the fact that the operatives at Oldham, England, prefer to own stock in other mills than the ones in which they work.

It is not shown that an admixture of nationalities or of male and female stockholders is necessarily a disadvantage. If other conditions are conformed to and the management is efficient, sex and nationality may be disregarded.

Failure to separate wages from profits in the aggregate rewards of stockholding workers and to pay wages for labor performed, and to pay them regularly, may be set down as leading to certain failure.

Ample working capital—capital beyond what goes into

plant — is of utmost importance. The most frequent mistake of intending co-operators is in underestimating the amount required.

The long and faithful service of many treasurers and agents shows that good business talent may and does coexist with a faithful devotion to the democratic principles of co-operation and that it is in such cases willing to labor for a very moderate reward for the greatest good of the greatest number, making no effort to secure autocratic control.

The fact that in other prosperous companies the business management has several times changed hands shows that success does not depend on the talents of any one man.

Stock-owning by workmen with participation in management gives a training in prudence, economy, and business affairs. It changes the whole current of the worker's thought and feelings, and economic conduct. He ceases to think of himself as a worker standing over against the capitalist employer in an antagonistic relation. He thinks of himself always as a proprietor and dignifies himself as such, and as such puts new zest into his work.

The men that succeed in co-operation are the kind of men that a generation ago, before the advent of great corporations, succeeded as independent employers on a small scale; men with some capital saved up, of superior character and energy, and with qualifications for business management. They cannot hope today, with the limited capital at their command, to compete successfully in manufacturing, as individuals. But by combining their resources and talents they may occupy as co-operators an industrial position of considerable importance.

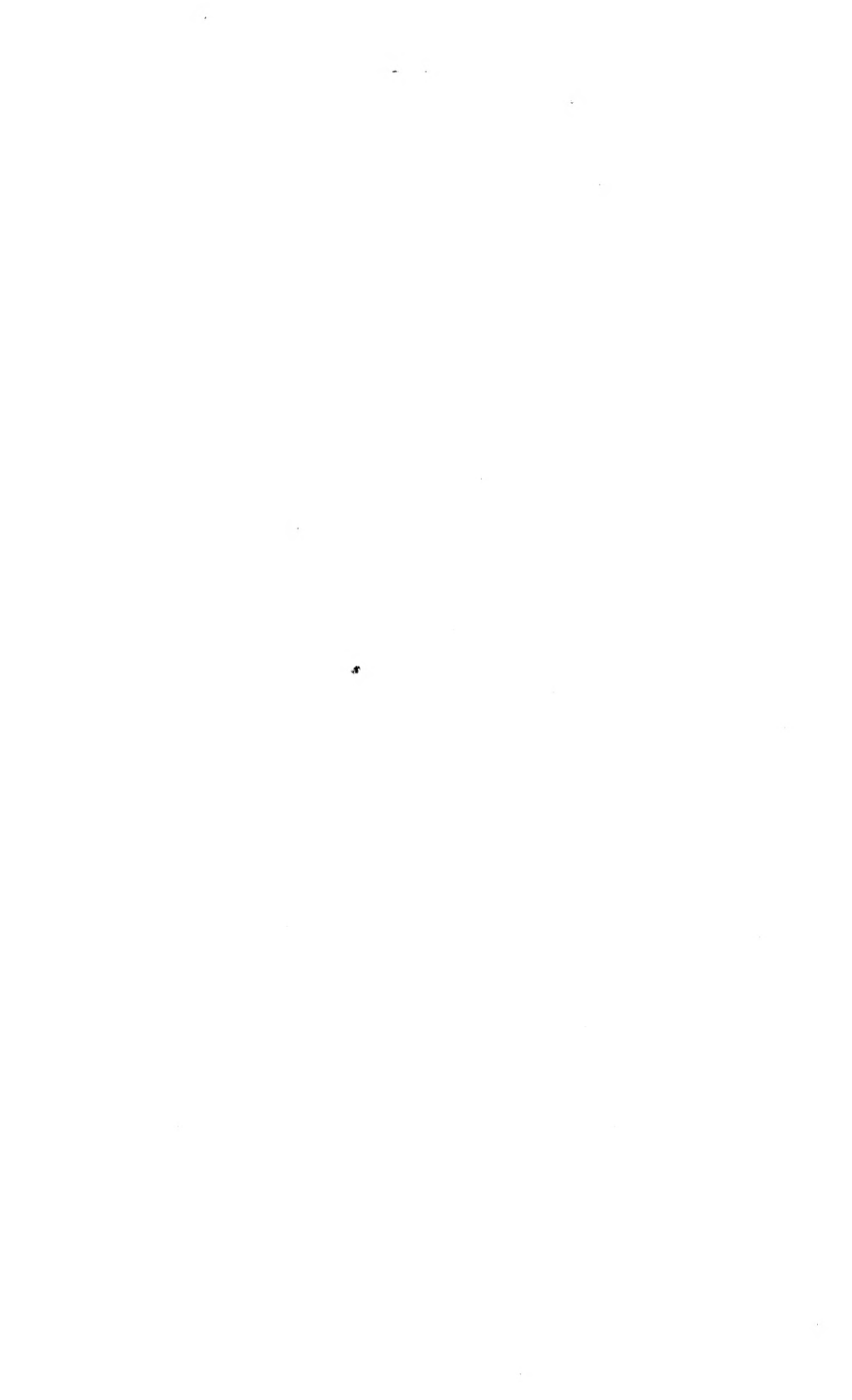
There is a crude popular conception of co-operation as a plan to get rid of the employer and the wages system. The workers are supposed to employ a manager to be subject to their will, and, if necessary, hire capital at usual rates of interest. Then, pooling their services, they are to divide among themselves whatever profit there may be after fixed charges are paid. This scheme is purely visionary and utterly impracticable. Workers cannot wait till an indefinite future for their reward, neither can they run the risk of getting no reward at all. They must be guaranteed something, to be paid at frequent intervals, and the only party that can so guarantee is the capitalist

employer, who alone can run risks and wait indefinitely for rewards. The capitalist employer may be an association of the workers themselves, but it is none the less an employer, a moral personality, possessing all the powers over individual workers that an individual employer would have. The more efficient and prosperous members become inevitably the controlling power in the association, and they will not consent to divide profits irrespectively of the value of services or to guarantee employment to inefficient members. The valid idea in this crude conception of co-operation is that in the degree that workmen develop the necessary qualifications and acquire the requisite capital they may become self-employers, and that, whether as self-employers or otherwise, they should as workers participate in the profits of industry in proportion to their efficiency. This idea is in process of realization through various forms of co-operative organization and profit sharing. Industrial partnership instituted by capitalist employers, and co-operation instituted by capital owning workmen, work toward the same result from different directions. Each has its own proper field and each will probably acquire increasing prominence in social economy.

PART III.

FOOD CONSUMPTION.

QUANTITIES, COSTS, AND NUTRIENTS OF
FOOD - MATERIALS.



PART III.

FOOD CONSUMPTION.

QUANTITIES, COSTS, AND NUTRIENTS OF FOOD-MATERIALS.

The food problem is one of the most important that can engross the attention of the people. It has a vital connection with the condition of the workingman, and the study of its various branches is essential to a proper understanding of the relative prosperity of industrial periods and the relative status of workingmen in different countries. It also has a directly practical interest for the wage worker, as it is undeniably true that much money is wasted in the purchase of food which is lacking in the elements of nutrition, and that the income of the working classes might be made far more effective if it were expended in accordance with the results of scientific research.

To supply in some measure the information necessary to enable the workingman to more intelligently regulate his expenditures for food, and thus enable him to secure with a given expenditure the maximum amount of nutritive elements, the Bureau has collected a number of schedules of dietaries, giving quantities and costs of food of people, mostly manual laborers, with limited incomes, in Massachusetts and Canada, which have been subjected to chemical analysis in order to estimate the quantities of nutritive material contained in them and to learn how they compare with regard to nutrients, cost, and fitness for their purpose with each other, as well as with other dietaries and with recognized standards.

It was not expected that either the data or the time at our disposal would suffice for exhaustive results, but rather that a brief preliminary study might be made which would serve to indicate the methods which should be followed, the sources of error and means for avoiding them, and the results which might be anticipated from a more detailed and complete inquiry, if such should at any time seem desirable and feasible. The results herewith presented are not brought forward as exhaustive therefore, but rather as a preliminary survey of a territory which promises rich rewards if thoroughly explored. While the data are to a certain extent incomplete, the final conclusions, it is believed, are not wide of the truth. The statistics of quantities of food, prices, etc., are compiled from original accounts with tradesmen, and may therefore be relied upon. The chief liability to error is undoubtedly to be found in the fact that the statistics give the amount of food purchased, not that actually eaten. Of the element of waste it is impossible to take accurate account. How much was wasted, or thrown away as refuse, cannot be ascertained. The housewives and boarding-house keepers would no doubt say that this element of waste was extremely small, and generally speaking this is no doubt true. Every effort has been made to eliminate error throughout the investigation, and it is not probable that the amount of error contained in the statistics is sufficient to affect materially the averages obtained.

GENERAL INTRODUCTION.

As the form in which the subject is here treated is, to most persons not specialists, somewhat new and a number of the technical terms employed, though common in late chemical and physiological treatises, have not yet worked their way into familiar use, it is proper to introduce here some general explanations, before proceeding to the discussion of the particular investigation undertaken by the Bureau.

A pound of lean beef (round steak freed from fat), and a quart of milk, both contain about the same quantity, say a quarter of a pound, of actually nutritive material. But the pound of beef costs more than the quart of milk and it is worth more as a part

of a day's supply of food. The nutritive materials, or nutrients, as they are called, in the lean meat, though the same quantity as in the milk, are different in quality, and of greater nutritive value.

We have here an illustration of a fundamental fact in the economy of foods, namely, that the differences in the values of different foods depend upon both the kinds and the amounts of the nutritive material which they contain. If, then, we would understand the nutritive value of foods, we must know, first of all, what they are composed of. Knowing this, we must next consider what the several food ingredients do in the body; what is the special work which each one of the different nutrients has to perform in building up our bodies and in supplying their wants. When, in addition to all this, we know how much of each class of nutrients our bodies require and our food-materials contain we shall be in condition to economize our foods as we do the other necessities of life.

THE NUTRIENTS OF FOOD AND THEIR USES IN NUTRITION.

Viewed from the standpoint of their uses in the nutrition of man, the constituents of ordinary foods may be succinctly classified as follows:

1. *Edible Substance*: the flesh of meats and fish; the shell contents of oysters; wheat flour.
2. *Refuse*: bones of meat and fish; the shells of oysters; bran of wheat.

The edible substance consists of

1. *Water*.
2. *Nutritive Substance, or Nutrients*.

Of the meat furnished by our butchers, the fish found in the market, and the other food for our tables, only a part serves to fulfil these purposes. The bone of roast beef is not used for food at all, and that of shad is worse than useless, because of the bother necessary to get rid of it; it is only the edible portion that is of actual value as food, the rest being merely refuse. And when we come to consider the edible portion, the meat freed from bone and gristle, the flesh of the fish, or the flour as it is baked in bread, we find that these consist largely of water. And although water is indispensable, that in the meat or the

potatoes on our tables is of no more value for the support of our bodies than the same amount in milk or in a glass of water.

Leaving out of account, then, the refuse and the water, we have the nutritive materials, or, as we may call them, the nutrients of our foods. Speaking as chemists and physiologists, we may say that our food supplies, besides water, four principal classes of nutritive ingredients or nutrients, viz., protein, carbohydrates, fats, and mineral matters; and that these are transformed into the tissues and fluids of the body, muscle and fat, blood and bone, and are consumed to produce heat and force.

As this is not the place for detailed accounts of the nature and the uses of the constituents of foods, we can only recapitulate the main facts in tabular form, showing the principal nutrients of food, the composition of animal foods, and the constituents of vegetable foods and beverages.

PRINCIPAL NUTRIENTS OF FOODS.

<i>Protein Compounds.*</i>	<i>Albuminoids or Proteids:</i> albumen of egg; myosin of muscle (lean of meat); casein of milk; gluten of wheat.
	<i>Gelatinoids:</i> ossein of bone; collagen of tendons (which boiled yield gelatin).

Fats: fats of meat; butter; olive oil; oil of maize and wheat.

Carbohydrates: starch; sugar; cellulose (woody fibre).

Mineral Matters, or Ash: calcium; potassium and sodium; phosphates and chlorides.

FUNCTIONS OF NUTRIENTS.

(*Ways in which the nutrients are used in the body.*)

<i>The Protein of food</i>	{ forms the (nitrogenous) basis of blood, muscle, connective tissue, etc.
	{ is transformed into fats and carbohydrates.
	{ is consumed for fuel.
<i>The Fats of food</i>	{ are stored as fat.
	{ are consumed for fuel.
<i>The Carbohydrates of food</i>	{ are transformed into fat.
	{ are consumed for fuel.

* The muscular tissues of animals, and, hence, the lean portions of meat, fish, etc., contain small quantities of so-called nitrogenous extractives — creatin, carnin, etc. — which are the chief constituents of meat extract. These contribute materially to the flavor, and somewhat to the nutritive effect, of the foods containing them. They are not usually deemed of sufficient importance, however, to be grouped as a distinct class in tabular statements of the composition of foods. As they contain nitrogen, like the protein compounds, they are commonly included with the protein.

Perhaps a few words should be added regarding the principal classes of nutrients.

Protein, so called, "Flesh-formers," or "Flesh substance."—The terms protein, proteids, and albuminoids, are applied somewhat indiscriminately, in ordinary usage, to several or all of certain classes of compounds characterized by containing carbon, oxygen, hydrogen, and, with them, nitrogen. The most important are the proteids, or albuminoids, of which albumen, the white of egg, fibrin of blood, casein of milk, myosin (the basis of muscle), and gluten of wheat, are examples. Allied to these, but occurring in smaller proportions in animal tissues and foods, are the gelatinoids, the nitrogenous compounds that make the basis of connective and other tissues. Gelatin, whence the name gelatinoid (gelatin-like), is derived from some of these tissues, and may be taken as a type of the compound of this class. As these constituents are of similar constitution, and have similar, or nearly similar, uses in nutrition, it is customary to group them together as protein. What is especially to be borne in mind, then, is that protein is a term applied to the nitrogenous constituents of our foods, and we shall see these are, in general, the most important, as they are the most costly, of the nutrients.

Fats.—We have familiar examples of these in the fat of meat (tallow, lard), in the fat of milk, which makes butter, and in olive, cotton-seed, and other animal and vegetable oils. The fats consist of carbon, oxygen, and hydrogen, and contain no nitrogen. In nutritive value, as in cost, they rank next to the protein compounds. For some of the nutritive functions, indeed, namely, those expressed by the words "consumed for fuel," the fats greatly exceed protein in value.

Carbohydrates.—Starch, cellulose (woody fibre), sugar, and inosite ("muscle sugar"), and other similar substances, are called carbohydrates. Like the fats, they consist of carbon, oxygen, and hydrogen; but they have less carbon and hydrogen, and more oxygen than the fats, and hence taking weight for weight do not equal the fats in value for "fuel."

Mineral Matters, or Ash.—When vegetable or animal matters are burned, more or less incombustible material remains as ash. The ingredients which make the ash are called mineral matters, or, sometimes, salts. They are, for the most part,

compounds of the elements, potassium, sodium, calcium and iron, with chlorine, sulphuric acid, and phosphoric acid. Sodium, combined with chlorine, forms sodium chloride, or common salt. Calcium, with phosphoric acid, forms calcium phosphate, or phosphate of lime, the mineral basis of bones.

Just how the different nutrients perform their different offices in nourishing the body, in building up its tissues, repairing its wastes, and serving as fuel to produce animal heat, and muscular and intellectual energy, is not yet fully known. Still, we have today a tolerably fair idea of the principal parts played by each class of nutrients.

Suppose that we have, for breakfast, beefsteak, bread and butter, and potatoes. The beef supplies us with considerable protein (in the lean meat) and fat. The butter is nearly all fat. The bread contains a little protein and fat. The potatoes the same ingredients, but in still smaller proportions, the principal nutrients of both bread and potatoes being starch, a carbohydrate.

Part of the protein of the food serves to repair the muscles, tendons, skin, and other organs, that are being worn out by constant use. The rest is consumed, sooner or later, — no one knows exactly when, where, or how. Part is probably transformed into fat, and stored as fat in the body, and thus replaces fat that is consumed to keep the body warm and to give the muscles strength for the work they have to do. And probably a part of the protein is changed into glycogen, a carbohydrate which occurs in the liver.

Part of the fat of the meat and bread is stored as fat in the body, and part is burned, yielding heat to keep the body warm, and muscular energy as well. The chief use of the carbohydrates, the starch and sugar, of the bread and potatoes seems to be to serve for fuel though they are transformed also into fats. It is a matter of common experience that many people are made corpulent by eating sugar and starchy foods, and grow lean when they avoid them.

The tables showing the composition of animal foods and the constituents of vegetable foods and beverages follow.

Composition of Animal Foods. Edible Portion — Flesh, etc., Freed from Bone, Shells, and other Refuse.

[Italics indicate European analyses, the rest are American.]

KINDS OF FOOD-MATERIALS.	Water.	Nutrients.	NUTRIENTS.			
			Protein (albuminoids).	Fats.	Carbohy- drates.	Ash.
MEATS — Fresh.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Beef, side, well fattened, . . .	54.7	45.3	17.2	27.1	-	1.0
Beef, lean, nearly free from fat, . . .	76.0	24.0	21.8	0.9	-	1.3
Beef, round, rather lean, . . .	63.7	33.3	23.0	9.0	-	1.3
Beef, sirloin, rather fat, . . .	63.0	49.0	24.0	19.0	-	1.0
Beef, neck, . . .	62.0	38.0	19.2	17.8	-	1.0
Beef, liver, . . .	63.5	30.5	20.1	5.4	3.5	1.5
Beef, tongue, . . .	63.5	36.5	17.4	18.0	-	1.1
Beef, heart, . . .	56.5	43.5	16.3	26.2	-	1.0
<i>Veal, lean, . . .</i>	78.8	21.2	19.7	0.8	-	0.7
<i>Veal, rather fat, . . .</i>	72.3	27.7	18.9	7.5	-	1.3
Mutton, side, well fattened, . . .	45.9	54.1	14.7	38.7	-	0.7
Mutton, leg, . . .	61.8	38.2	18.3	19.0	-	0.9
Mutton, shoulder, . . .	58.6	41.4	18.1	22.4	-	0.9
Mutton, loin (chops), . . .	49.3	50.7	15.0	35.0	-	0.7
MEATS — Prepared.						
Dried beef, . . .	58.6	41.4	30.3	4.4	-	6.7
Corned beef, rather lean, . . .	58.1	41.9	13.3	26.6	-	2.0
Smoked ham, . . .	41.5	58.5	16.7	39.1	-	2.7
Pork, bacon, salted, . . .	10.0	90.0	3.0	80.5	-	6.5
FOWL.						
Chicken, rather lean, . . .	72.2	27.8	24.4	2.0	-	1.4
Turkey, medium fatness, . . .	66.2	33.8	23.3	8.7	-	1.3
Goose, fat, . . .	38.0	62.0	15.9	45.6	-	0.5
DAIRY PRODUCTS, EGGS, ETC.						
<i>Cow's milk, . . .</i>	87.4	12.6	3.4	3.7	4.8	0.7
<i>Cow's milk, skimmed, . . .</i>	90.7	9.3	3.1	0.7	4.8	0.7
<i>Cow's milk, buttermilk, . . .</i>	90.3	9.7	4.1	0.9	4.0	0.7
<i>Cow's milk, whey, . . .</i>	93.2	6.8	0.9	0.2	5.0	0.7
Cheese, whole milk, . . .	31.2	68.8	27.1	35.5	2.3	3.9
Cheese, skimmed milk, . . .	41.3	58.7	35.4	6.8	8.9	4.6
Butter, . . .	9.0	91.0	1.0	87.5	0.5	2.0
Hen's eggs, . . .	73.1	26.9	13.4	11.8	0.7	1.0
FISH, ETC.						
Flounder, whole, . . .	84.2	15.8	13.8	0.7	-	1.3
Haddock, dressed, . . .	81.4	18.6	17.1	0.3	-	1.2
Bluefish, dressed, . . .	78.5	21.5	19.0	1.2	-	1.3
Cod, dressed, . . .	82.6	17.4	15.8	0.4	-	1.2
Whitefish, whole, . . .	69.8	30.2	22.1	6.5	-	1.6
Shad, whole, . . .	70.6	29.4	18.5	9.5	-	1.4
Mackerel, average, whole, . . .	71.6	28.4	18.3	8.2	-	1.4
Salmon, whole, . . .	63.6	36.4	21.6	13.4	-	1.4
Salt cod, . . .	53.8	26.1	21.7	0.3	-	20.1
Smoked herring, . . .	34.5	53.8	36.4	15.8	-	11.7
Salt mackerel, . . .	42.2	47.2	22.1	22.6	-	10.6
Oysters, . . .	87.2	12.8	6.0	1.2	3.6	2.0
Scallops, . . .	80.3	19.7	14.7	0.2	3.4	1.4

Composition of Animal Foods. Specimens as Purchased in the Markets (including both Edible Portion and Refuse).

[Italics indicate European analyses, the rest are American.]

KINDS OF FOOD-MATERIALS.	Refuse: bones, skins, shells, etc.	EDIBLE PORTION.					
		Water.	Nutri- ents.	NUTRIENTS.			
				Protein (albumin- oids).	Fats.	Carbo- hydrates, etc.	Mineral matters.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
MEATS — Fresh.							
Beef, side, well fattened, . .	19.7	44.0	36.3	13.8	21.7	—	0.8
Beef, round, rather lean, . .	10.0	60.0	30.0	20.7	8.1	—	1.2
Beef, sirloin, rather fat, . .	25.0	45.0	30.0	15.0	14.3	—	0.7
Beef, neck,	19.9	49.6	30.5	15.4	14.3	—	0.8
Beef, tongue,	15.3	54.0	30.7	14.5	15.4	—	0.8
Beef, heart,	6.0	53.4	40.6	14.8	24.8	—	1.0
Mutton, side, well fattened, .	20.0	42.9	37.1	13.2	23.2	—	0.7
Mutton, leg,	18.4	50.4	31.2	15.0	15.5	—	0.7
Mutton, shoulder,	16.8	48.7	34.5	15.0	18.7	—	0.8
Mutton, loin (chops), . . .	16.3	41.3	42.4	12.5	29.3	—	0.6
MEATS — Prepared.							
Dried beef,	6.5	55.5	38.0	27.4	4.2	—	6.4
Corned beef, rather lean, . .	6.2	54.5	39.3	12.5	24.9	—	1.9
Smoked ham,	12.5	36.3	51.2	14.6	34.2	—	2.4
Pork, bacon, salt,	5.0	9.5	85.5	2.8	76.5	—	6.2
FOWL.							
Chicken, rather lean,	41.6	42.2	16.2	14.2	1.2	—	0.8
Turkey, medium fatness, . .	35.4	42.8	21.8	15.4	5.6	—	0.8
DAIRY PRODUCTS, EGGS, ETC.							
<i>Cow's milk,</i>	—	87.4	12.6	3.4	3.7	4.8	0.7
<i>Cow's milk, skimmed, . . .</i>	—	90.7	9.3	3.1	0.7	4.8	0.7
<i>Cow's milk, buttermilk, . .</i>	—	90.3	9.7	4.1	0.9	4.0	0.7
<i>Cow's milk, whey,</i>	—	93.2	6.8	0.9	0.2	5.0	0.7
<i>Cheese, whole milk,</i>	—	31.2	68.8	27.1	35.5	2.3	3.9
<i>Cheese, skimmed milk, . . .</i>	—	41.3	58.7	38.4	6.8	8.9	4.6
<i>Butter,</i>	—	9.0	91.0	1.0	87.5	0.5	2.0
<i>Hen's eggs,</i>	13.7	63.1	23.2	11.6	10.2	0.6	0.8
FISH, ETC.							
FloUNDER, whole,	66.8	27.2	6.0	5.2	0.3	—	0.5
Haddock, dressed,	51.0	40.0	9.0	8.2	0.2	—	0.6
Bluefish, dressed,	45.6	40.3	11.1	9.8	0.6	—	0.7
Cod, dressed,	30.0	58.4	11.6	10.6	0.2	—	0.8
Whitefish, whole,	53.5	32.5	14.0	10.3	3.0	—	0.7
Shad, whole,	50.1	35.2	14.7	9.2	4.8	—	0.7
Mackerel, average, whole, . .	44.6	40.4	15.0	10.0	4.3	—	0.7
Salmon, whole,	35.3	40.6	24.1	14.3	8.8	—	1.0
Salt cod,	24.9	40.3	19.4	16.0	0.4	—	Salt 15.4 3.0
Smoked herring,	44.4	19.2	29.9	20.2	8.8	—	6.5 0.9
Salt mackerel,	33.3	28.1	31.5	14.7	15.1	—	7.1 1.7
Oysters, in shell,	82.3	15.4	2.3	1.1	0.2	0.6	0.4
Oysters, solids,	—	87.2	12.8	6.3	1.6	4.0	0.9
Scallops, edible portion, . .	—	80.3	19.7	14.7	0.2	3.4	1.4

Constituents of Vegetable Foods and Beverages.

[The analyses of foods in Roman letters are American, those of foods and beverages in italics are European.]

KINDS OF FOOD AND BEVERAGES.	Water.	NUTRIENTS.				
		Protein (albu- minoids).	Fats.	Carbo- hydrates, etc.	Woody fibre.	Mineral matters.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
FOODS.						
Wheat flour, average,*	11.6	11.1	1.1	75.4	0.2	0.6
Wheat flour, maximum,*	13.5	13.5	2.0	78.5	1.2	1.5
Wheat flour, minimum,*	8.3	8.6	0.6	68.3	0.1	0.3
Graham flour (wheat),	13.0	11.7	1.7	69.9	1.9	1.8
Cracked wheat,	10.4	11.9	1.7		74.6	1.4
Rye flour,	13.1	6.7	0.8	78.3	0.4	0.7
Pearled barley,	11.8	8.4	0.7	77.8	0.3	1.0
Buckwheat flour,	13.5	6.5	1.3	77.3	0.3	1.1
Buckwheat "farina,"	11.2	3.3	0.3	84.7	0.1	0.4
Buckwheat "groats,"	10.6	4.8	0.6	83.1	0.3	0.6
Oatmeal,	7.7	15.1	7.1	67.2	0.9	2.0
Maize meal,	14.5	9.1	3.8	63.2	1.8	1.6
Hominy,	13.5	8.3	0.4	77.1	0.3	0.4
Rice,	12.4	7.4	0.4	79.2	0.2	0.4
Beans,	13.7	23.2	2.1	53.7	3.7	3.6
Pease,	15.0	22.9	1.8	52.4	5.4	2.5
Potatoes,	75.5	2.0	0.2	20.5	0.8	1.0
Sweet potatoes,	75.8	1.5	0.4	20.0	1.1	1.2
Pole beans,	83.5	2.8	0.3	10.0	2.6	0.8
Green pease,	81.8	3.4	0.4	12.1	1.6	0.7
Turnips,	91.2	1.0	0.2	6.0	0.9	0.7
Beets,	83.9	2.1	0.1	11.7	1.2	1.0
Carrots,	87.9	1.0	0.2	8.9	1.2	0.8
Onions,	89.3	1.1	0.2	8.3	0.6	0.5
Cabbage,	90.0	1.9	0.2	4.9	1.8	1.2
Lettuce,	94.3	1.4	0.3	2.2	0.7	1.1
Cauliflower,	90.4	2.5	0.4	5.0	0.9	0.8
Tomatoes,	92.4	1.3	0.3	4.6	0.8	0.6
Melons,	95.2	1.1	0.6	1.4	1.1	0.6
Pumpkins,	90.0	0.7	0.1	7.3	1.3	0.6
Squash,	87.8	0.7	0.2	9.1	1.1	1.1
Apples,	84.8	0.4	-	12.8	1.5	0.5
Pears,	83.0	0.4	-	12.0	4.3	0.3
Starch,	15.1	1.2	-	83.3	-	0.4
Tapioca,	13.3	0.6	-	86.0	-	0.1
Cane-sugar,	2.2	0.3	-	96.7	-	0.8
Molasses,	24.6	-	-	71.0	+	2.3
Wheat bread,†	32.7	8.9	1.9		55.5	1.0
Graham bread,	34.2	9.5	1.4		53.3	1.6
Rye bread,	30.0	8.4	0.5		59.7	1.4
Soda crackers,	8.0	10.3	9.4		70.5	1.8
"Boston" crackers,	8.3	10.7	9.9		68.7	2.4
"Oyster" crackers,	3.9	12.3	4.8		76.5	2.5
Oatmeal crackers,	4.9	10.4	13.7		69.6	1.4
Pilot (bread) crackers,	7.9	12.4	4.4		74.2	1.1
Macaroni,	13.1	9.0	0.3		76.8	0.8
BEVERAGES.						
Lager beer,	90.3	0.5	Alcohol.	5.0	Free acid.	0.2
Porter and ale,	88.5	0.7	5.2	5.3	-	0.3
Rhenish wine, white,	86.3	-	10.5	2.6	0.4	0.2
Rhenish wine, red,	86.9	-	8.9	3.4	0.5	0.3
French wine, claret,	85.4	-	8.1	2.7	0.6	0.2

* Of analyses of American flours. The figures for "maximum" and "minimum" denote the largest and smallest percentages, respectively, found in the analyses. The sum of the figures representing the maximum must, therefore, exceed, and those for minimum fall below, 100 per cent.

† From flour of about average composition.

‡ Other organic matter, 2.1.

DIGESTIBILITY OF FOOD-MATERIALS AS AFFECTING THEIR
NUTRITIVE VALUES.

The question of the digestibility of foods is a very complex and difficult one, and it is to be noticed that the men who know the most about it are generally the least ready to make definite and sweeping statements as to the digestibility of this or that kind of food-material. One great difficulty is the fact that what we ordinarily call the digestibility of a food includes several different things, the ease with which it is digested, the time required for digesting it, and the proportions of its several constituents that are digested.

The ease of digestion of a given food-material and its suitability to the digestive organs of a given person are physiological questions, hardly capable of categorical answer. The actual amounts digested are capable of more nearly accurate determination. Indeed, the percentage of the more important constituents of various foods actually digested by domesticated animals of different species, breeds, sexes, and ages, and under varying circumstances, has been a matter of active experimental investigation in the German agricultural experiment stations during the past twenty years. Briefly expressed, the method consists in weighing and analyzing both the food consumed and the solid excrement. Since the latter represents the amount of food undigested, the difference is the amount digested.

Such experiments upon human subjects, however, are rendered much more difficult by the necessity of avoiding complex mixtures of foods, in order that the digestibility of each particular food or food ingredient may be determined with certainty, and the fact that it is not easy to continue to eat the same kind of food long enough for a satisfactory experiment.

It is of course desirable to take account of the digestibility of food-materials in comparative statements of their nutritive values. The facts at hand are, however, hardly sufficient to warrant their introduction into food-tables. A considerable number of experiments have been carried out, nevertheless, the majority in the physiological laboratory of the University of Munich, Germany. The results of a number of them are concisely set forth in the following table :

Percentages of Undigested Matters in Food-Materials.

KIND OF FOOD EATEN.	Percentage of the dry food lost as excrement.	PERCENTAGES OF THE	
		Nitrogen* of the foods which goes to waste in the excrement.	Carbohydrates of the foods which go to waste in the excrement.
Lean beef,	5 or 6	2 or 3	-
Fish (haddock),	5 or 6	2 or 3	-
Eggs,	5½	2½	-
Milk,	8 to 10	7 to 12	-
Milk, with cheese,	6 to 11	3 to 5	-
Rice,	4	25	1
Potatoes,	9½	32	7½
Fat bacon, with some bread and beef, .	8½ to 9¼	12 to 14	2 to 6
White bread (wheat),	3¾ to 5¼	19 to 26	1 to 1½
Coarse rye bread (black bread), . . .	15	32	11
Cabbage,	15	15½	15½
Yellow beets,	21	39	18

* Protein.

Thus the men upon whom the experiments were made digested all but five or six per cent of the whole dry matter (water-free substance) of the lean beef and the fish, and all but two per cent of their protein (nitrogen). Of the water-free substance of milk, a somewhat larger proportion passed through the body undigested. The vegetable foods were much less completely digested, the coarse rye bread and the beets being, in this sense, the least digestible of all.

COSTS OF PROTEIN.

A subject that has received but little attention in this country, though it has become a vital one in Europe, and is becoming so with us, is the cost of the nutritive material of our foods. The relative cheapness or dearness of different foods must be judged by comparing, not the prices per pound, but the costs of the actual nutrients. In making such comparisons, the cost may be assumed to fall, not upon the inedible portions and the water, but solely upon the three classes of nutrients, the protein, fats, and carbohydrates. The relative physiological values of the nutrients in different foods depend upon (1) their digestibility and (2) their functions and the proportions in which they can replace each other in nutrition. An accurate physiological valuation is, in the present state of our knowledge, at least, impracticable. The pecuniary costs of the nutrients are, however, more nearly capable of approximation.

Various methods have been proposed for computing the relative pecuniary costs of the nutrients of foods, none of which, however, are entirely beyond criticism. The following, based upon German estimates of the relative costs of protein, fats, and carbohydrates, is perhaps as satisfactory as any. They are those of Prof. König.

From extended comparisons of the composition and market prices of the more important animal and vegetable food-materials, such as meats, fish, flour, etc., those which serve for nourishment and not as luxuries, and form the bulk of the food of the people, it has been estimated that a pound of protein costs, on the average, five times as much, and a pound of fats three times as much, as a pound of carbohydrates; that, in other words, these three classes of nutrients stand related to each other, in respect to cost, in the following proportions:

Assumed Ratios of Costs in Staple Foods.

Protein,	.	.	.	.	.	.	.	.	.	5
Fats,	.	.	.	.	.	.	.	.	.	3
Carbohydrates,	.	.	.	.	.	.	.	.	.	1

Perhaps a study of foods and prices in our markets might lead to a different scale of valuations, but this will serve our present purpose.

Suppose a pound of beef to cost 25 cents, and to contain 25 per cent of inedible matters, bone, etc., 45 per cent of water, and 30 per cent of nutritive substance, upon which latter — the bone and water being assumed to be without nutritive value — the whole cost comes. The 30 per cent, or $\frac{30}{100}$ pounds, of nutritive substance thus costs 25 cents, or at the rate of $83\frac{1}{3}$ cents per pound. If now we leave out of account the minute quantities of carbohydrates and the mineral matters, the whole cost will fall upon the protein and fats. Assuming these to cost in the ratio of 5:3 and the amounts in the meat to be protein 15 per cent and fats $14\frac{1}{4}$ per cent, an easy computation will show the protein to cost 106 cents, and the fats 64 cents, per pound.*

* The methods of computing the cost of protein and the amounts obtained for 25 cents in different foods are shown in the foot-note on the next page.

Of the different nutrients, protein is physiologically the most important, as it is pecuniarily the most expensive. For these reasons the cost of protein in different food-materials may be used as a means of comparing their relative cheapness or dear-ness, as is done in the following table. The figures represent the ordinary prices per pound, and the corresponding costs of protein, in specimens of food-materials obtained in New York and Middletown, Conn., markets. Though the number of specimens is too small for reliable averages, the figures, taken together, doubtless give a tolerably fair idea of the relative costliness of the nutrients in the different classes of foods. It will be understood, of course, that the computations make allow-ance for the costs of the other nutrients, the fats and the car-bohydrates, though for the sake of brevity the latter are omitted from the table.

1. *Cost of Protein*:—Suppose we wish to learn the costs of the nutrients in wheat flour, containing 11.1 per cent of protein, 1.1 per cent of fat, and 75.4 per cent of carbohydrates, and costing 4 cents a pound.

Let x represent the cost of a pound of carbohydrates in cents. Then, by the ratio of costs assumed above, a pound of fats would cost $3x$ cents and a pound of protein $5x$ cents. 100 pounds of the flour will cost 400 cents, and will contain 11.1 pounds of protein, 1.1 pounds of fats, and 75.4 pounds of carbohydrates. We shall have

$75.4x$ cents = cost of 75.4 pounds of carbohydrates.

$3.3x$ cents = " 1.1 " fats.

$55.5x$ cents = " 11.1 " protein.

Total, . $134.2x$ cents = " 100 " flour = 400 cents.

Whence $x = 3$ cents, cost of carbohydrates per pound.

$3x = 9$ cents, " fats.

$5x = 15$ cents, " protein.

2. *Amounts of Nutrients obtained for 25 cents*:—At 4 cents per pound for the flour, 25 cents will pay for 6.25 pounds. By the percentage composition above given 6.25 pounds of flour will contain 0.69 pound of protein, 0.07 pound of fats, and 4.71 pounds of carbohydrates, which are the amounts of nutrients obtained for 25 cents.

Comparative Cost of Protein in Food-Materials.

FOOD-MATERIALS.	Prices per pound.	Cost of Protein per pound.	FOOD-MATERIALS.	Prices per pound.	Cost of Protein per pound.
<i>Meats.</i>					
Beef, sirloin,	23	106	Cod,	6	56
Mutton, leg,	22	91	Salt mackerel,	12.5	53
Beef, sirloin,	20	86	Salt cod,	7	43
Mutton, leg,	20	82	Mackerel,	5	40
Mutton, side,	20	73	Salt cod,	6	37
Beef, round,	18	70	Salt cod,	5	31
Mutton, leg,	16	66	Alewives,	3	27
Corned beef, lean, . .	18	66	Smoked herring, . . .	6	24
Beef, round,	15	59	<i>Dairy Products and Eggs.</i>		
Corned beef, lean, . .	15	55	Eggs, 40 cts. per dozen, .	28	157
Smoked ham,	18	51	Eggs, 25 cts. per dozen, .	18	101
Smoked ham,	15	43	Eggs, 15 cts. per dozen, .	11	62
Corned beef, lean, . .	10	36	Milk, 8 cts. per quart, .	4	61
Beef, flank,*	15	36	Milk, 7 cts. per quart, .	3.5	53
Beef, neck,	8	33	Cheese, whole milk, . .	18	37
Pork,* very fat, salted, .	16	33	Cheese, whole milk, . .	13	27
Pork,* very fat, salted, .	12	25	Cheese, skimmed milk, .	8	18
Pork,* very fat, salted, .	10	21	<i>Vegetable Foods.</i>		
<i>Fish.</i>			Wheat bread,	8	38
Salmon,	100	511	Rice,	9	38
Oysters, 50 cts. per quart, .	25	336	Potatoes,* \$1.00 per bush.,	1.7	30
Oysters, 40 cts. per quart, .	20	269	Wheat bread,	6	29
Oysters, 30 cts. per quart, .	15	202	Potatoes,* 75 cts. per bush.,	1.58	22
LOBSTERS,	12	202	Wheat bread,	4	19
Salmon,	30	153	Beans, 13 cts. per quart, .	6.5	18
Flounder,	8	149	Wheat flour,	4.5	17
Shad,	12	99	Wheat flour,	4	15
Bluefish,	10	98	Oatmeal,	5	15
Lake trout,	15	92	Beans, 10 cts. per quart, .	5	14
Halibut,	15	85	Potatoes,* 50 cts. per bush.,	0.85	14
Haddock,	7	84	Wheat flour,	3.5	13
Mackerel,	10	79	Corn meal,	3	12
Cod,	8	75	Milk, 6 cts. per quart, .	3	43
Canned salmon,	20	70	Wheat flour,	3	12
Shad,	8	66			

* Containing little protein, the chief value being in other ingredients.

Thus the nutrients of vegetable foods are, in general, much less costly than in animal foods. The animal foods have, however, the advantage of containing a larger proportion of protein and fats, and the protein, at least, in more digestible forms.

Among the animal foods, those which rank as delicacies are the costliest. By the above calculations, the protein in the oysters costs from two to three dollars, and in salmon rises to over five dollars per pound. In beef, mutton, and ham it varies from 106 to 33 cents; in shad, bluefish, haddock, and halibut the range is about the same; while in cod and mackerel, fresh and salted, it varies from 75 to as low as 31 cents per pound. Salt cod and salt mackerel are nearly always, fresh cod and mackerel often, and even the choicer fish, as blue-

fish and shad, when abundant, cheaper sources of protein than any but the inferior kinds of meat. Among meats, pork is the cheapest; but salt pork or bacon has the disadvantage of containing very little protein.

It is well worth the noting that oatmeal is one of the cheapest foods that we have; that is, it furnishes more nutritive material, in proportion to the cost, than almost any other food. Corn meal is indeed cheaper, but the oatmeal has this great advantage over corn meal and wheat flour, that it has more protein. Of course, if we are to eat large quantities of lean meat — and many people, doubtless, eat more than is best for their health, saying nothing of their purses — the extra protein in the oatmeal is of little consequence to us. But if one wishes to economize in his food, oatmeal, rightly cooked, affords an excellent material therefor.

One of the most interesting things brought out in the table is the cheapness of the staple vegetable food-materials such as potatoes, wheat flour, corn meal, oatmeal, and beans.

AMOUNTS OF NUTRIENTS OBTAINED FOR 25 CENTS IN DIFFERENT FOOD-MATERIALS.

The above method of computing the relative expensiveness of different kinds of food-materials is, as has been said, open to the objection that it is based upon a certain assumed ratio of relative costs of protein, fats, and carbohydrates, which may or may not be right in any given case. A method free from these objections consists in computing how much of the several nutrients may be obtained for a given sum, for instance, 25 cents, in different food-materials. This is done in the following table:

Amounts of Nutrients Furnished for 25 Cents in Food-Materials at Ordinary Prices.

FOOD-MATERIALS.	Prices per Pound.	25 CENTS WILL PAY FOR —				
		Total Food- Material.	NUTRIENTS — POUNDS.			
			Total.	Protein.	Fats.	Carbo- hydrates.
	Cents.	Pounds.				
<i>Meats.</i>						
Beef, sirloin,	25	1.00	.29	.15	.14	-
Mutton, leg,	22	1.14	.34	.17	.17	-
Beef, sirloin,	20	1.25	.37	.19	.18	-
Mutton, leg,	20	1.25	.38	.19	.19	-
Beef, round,	18	1.59	.40	.29	.11	-
Mutton, side,	20	1.25	.46	.17	.29	-
Beef, round,	15	1.67	.49	.35	.14	-
Beef, neck,	8	3.13	.92	.48	.44	-
Pork, salted, fat,	16	1.56	1.23	.04	1.19	-
Pork, salted, fat,	12	2.08	1.65	.06	1.59	-
Pork, salted, fat,	10	2.50	1.98	.07	1.91	-
<i>Fish.</i>						
Salmon,	100	.25	.06	.04	.02	-
Oysters, 50 cts. per quart,	25	1.00	.12	.06	.02	.04
Oysters, 35 cts. per quart,	17.5	1.43	.17	.09	.02	.06
Salmon,	30	.83	.19	.12	.07	-
Bluefish,	10	2.50	.27	.25	.02	-
Shad,	12	2.08	.29	.19	.10	-
Cod,	8	3.13	.34	.33	.01	-
Mackerel,	10	2.50	.35	.25	.10	-
Canned salmon,	20	1.25	.44	.25	.19	-
Shad,	8	3.13	.44	.29	.15	-
Cod,	6	4.17	.45	.44	.01	-
Salt cod,	7	3.57	.58	.57	.01	-
Salt mackerel,	12.5	2.00	.60	.30	.30	-
Mackerel,	5	5.00	.71	.51	.20	-
Salt cod,	5	5.00	.82	.80	.02	-
Smoked herring,	6	4.17	1.21	.84	.37	-
<i>Dairy Products and Eggs.</i>						
Butter,	30	.83	.73	-	.73	-
Milk, 8 cts. per quart,	4	6.25	.74	.21	.23	.30
Milk, 7 cts. per quart,	3.5	7.14	.84	.24	.26	.34
Cheese, whole milk,	18	1.39	.90	.38	.49	.03
Milk, 6 cts. per quart,	3	8.33	.99	.28	.31	.40
Cheese, whole milk,	15	1.67	1.08	.45	.59	.04
Cheese, whole milk,	12	2.08	1.35	.56	.74	.05
Cheese, skim milk,	8	3.13	1.69	1.20	.21	.28
<i>Vegetable Foods.</i>						
Wheat bread,	8	3.13	2.08	.28	.06	1.74
Wheat bread,	6	4.17	2.75	.37	.07	2.31
Potatoes, \$1.00 per bushel,	1.7	13.24*	3.04	.27	.03	2.74
Beans, 10 cts. per quart,	5	5.00	3.96	1.16	.11	2.69
Potatoes, 75 cts. per bushel,	1.25	18.00*	4.13	.36	.04	3.73
Wheat bread,	4	6.25	4.15	.56	.12	3.47
Oatmeal,	5	5.00	4.48	.76	.36	3.36
Wheat flour,	4.5	5.56	4.83	.69	.06	4.15
Wheat flour,	4	6.25	5.44	.69	.04	4.71
Wheat flour,	3.5	7.14	6.25	.79	.08	5.58
Potatoes, 50 cts. per bushel,	0.85	26.47*	6.06	.53	.05	5.48
Indian meal,	3	8.33	6.90	.70	.29	5.91
Wheat flour,	3	8.33	7.29	.92	.09	6.28

* The amounts for potatoes are actually, though not apparently, correct, allowance being made for waste, that is, adhering earth, etc.

We close this general introduction with the following table of consumption of food, etc., in a boarding-house, for thirty-nine weeks by 237 men, all laborers, presenting also the average weekly consumption per man for each article at a cost for each person of \$1.30 per week. The table is compiled from original data secured by the Bureau.

Statistics of Boarding-House Consumption.

PERSONS.	Beans.	Beef.	But- ter.	Coffee.	Dried Apples.	Fish.	Flour.	Molas- ses.	Nut- ton.	Onions.
	bu.	lbs.	lbs.	lbs.	lbs.	lbs.	bbls.	gal.	lbs.	bu.
237 men, . . .	118	19,683	8,121	370	1,716	2,550	534	2,272	2,840	81
One man per week,	.012	2.12	.878	.04	.185	.275	.057	.245	.307	.008

Statistics of Boarding-House Consumption — Concluded.

PERSONS.	Pease.	Pork.	Pota- toes.	Rice.	Salt.	Soap.	Tea.	Tur- nips.	Vine- gar.	Milk.
	bu.	bbls.	bu.	bu	lbs.	lbs	lbs.	bu.	gals.	qts.
237 men, . . .	98	250	1,842	787	2,925	1,708	600	31	262	2,821
One man per week,	.01	.027	.199	.085	.316	.184	.064	.003	.028	.306

THE DIETARIES COLLECTED BY THE BUREAU.

The dietaries secured by the Bureau in the present investigation are for convenience divided into three series, designated as follows :

A. Miscellaneous, Massachusetts. These include fifteen dietaries of families and boarding-houses. The families are nearly all laboring people, while the boarders in the boarding-houses are mostly operatives in mills and factories, though some are clerks, dressmakers, etc. A few are French Canadians.

B. French Canadians, Massachusetts. These include nineteen dietaries of families and boarding-houses, all of French Canadians, the majority being operatives in mills and factories.

C. French Canadians, Canada. These include dietaries of twenty-seven families and boarding-houses in Montreal,

Quebec, and other places in Canada. The people are represented as all belonging to the laboring classes.

Series A and B are thus divided as the presence of French Canadian workers in Massachusetts affords an interesting opportunity for comparison, in regard to dietaries, of the same class of workers under the conditions surrounding them in their original habitations and Massachusetts, relatively. This opportunity did not present itself with respect to any other nationality which has selected Massachusetts as its home, and the results of the comparison will in a measure indicate the progress that has been made by the French Canadian since his emigration.

A number of representative dietaries have been selected from the total number collected in each series and subjected to detailed examination. The results are given under "Details of Dietaries."

The first object of the examination has been to learn the amounts of the principal nutrients — protein, fats, and carbohydrates — supplied in the several dietaries. To get them in uniform shape they have been transcribed to forms specially prepared for the purpose. These give :

First, a general statement of the number and classes of persons nourished by the dietary, with income and prices of board, where the prices are stated in the original reports.

Second, the amounts, cost, and estimated amounts of nutrients of the foods composing the dietary. The food-materials have been divided into (*a*) meats, fish, etc. ; (*b*) dairy products and eggs, and (*c*) vegetable food-materials.

Third, the estimates of the amounts, costs, and amounts of nutrients supplied per man per day. In a number of cases explanatory notes are added.

DATA UPON WHICH THE PRESENT STUDY OF DIETARIES IS BASED.

The principal classes of data employed are the following :

Class A. Those contained in statistics of dietaries as collected and furnished for examination.

I. Statistics of food-materials.

- a. Kinds.
- b. Quantities.
- c. Costs.

II. Statistics of consumption of food-materials, that is, persons nourished and time.

- a. Number of persons nourished by food-materials.
- b. Sex " " " " "
- c. Age " " " " "
- d. Occupation " " " "
- e. Time during which the consumers were nourished.

Class B. Data obtained from other sources and used in the computations.

I. Chemical composition of the food-materials. Proportions of nutrients (nutritive ingredients) in each.

II. Relative nutritive effects of the several classes of nutrients, that is, proportions in which they may replace each other in the performance of certain functions of nutrition.

III. Proportions of nutrients required by persons of various classes, differing in age, sex, occupation, or other conditions by which the demand for nutrients is decided.

The statistics of Class A are set forth in the details of dietaries, and their principal facts presented in the tables on pages 305-310, *post*. The details of the dietaries are transcribed from the original schedules secured by the Bureau. The arrangement and classification of facts presented rest upon these dietaries.

The data of Class B demand somewhat more detailed explanations and comments, which we now present.

COMPOSITION OF FOOD-MATERIALS.

A large number of analyses of meats, vegetables, and other food-materials have been made in Europe, but only comparatively few analyses of American food-materials other than cereal and dairy products have been reported. A number of specimens, — some three hundred — mostly of fish and meats, but some of other food-materials, have, however, been analyzed at the instance of the United States Fish Commission

and National Museum, but await publication. These latter have been used, with other available data from home and foreign sources, for the present calculation. As may be seen in the explanatory notes accompanying the details of dietaries, there are for a few materials no analyses available. For these cases, fortunately few and of relatively small importance, estimates have been made.

All our ordinary food-materials vary more or less in composition, and wherever the specimens actually used cannot be analyzed, averages of analyses of other specimens must be used as estimates. For most vegetable foods and dairy products the range of variation is not so wide but that, with the number of analyses at hand, such averages will serve tolerably well. The same may be said of most of our common species of food fishes. But with meats the case is somewhat different, since there are wide variations, not only in the composition of meat from animals of different kinds, but in that from different animals of the same kind and in that from different parts of the same animal.

The method of estimating the composition of beef was as follows :

Among the analyses above referred to as executed in behalf of the National Museum were those of a series of specimens of beef. A large amount, the larger part, we are informed, of the beef consumed in many of our Eastern cities is so-called "Chicago" or "Western" beef, which is slaughtered in Chicago or elsewhere and brought East. From a carload of "Chicago beef" a side was selected by an experienced dealer as of average quality, especial pains being taken to secure one of average fatness.

This side of beef was divided into twenty-five pieces, or "cuts," in the manner common in New York markets, and portions of each piece, sufficient to represent the whole, were analyzed, the proportions of refuse (bone, gristle, etc.), water, and nutrients being determined.

A diagram representing these divisions of the beef was placed in the hands of the collectors of the dietaries here examined, who, so far as practicable, indicated in their statements the parts of the animal from which the beef of the several dietaries was taken. The manner of cutting up the beef differs in different places, but not sufficiently to very materially affect the estimates. A more

serious matter is the variation of different specimens of beef and it is, of course, a question whether the side selected for analysis, as above stated, fairly represents the average of the kinds in the dietaries. We are informed that in all the Massachusetts cities, where the dietaries were collected, nearly all the beef used is so-called "Chicago beef," and it is probable that the analyses fairly indicate the quality of the beef sold.

As the best way for utilizing these data an assistant has gone over the dietaries, noted the "cuts" of beef where stated and ascribed to each the percentages of nutrients found in the analyses of corresponding "cuts." The results are shown in the following table. Where the original includes two or more "cuts" in one entry the average is taken. The several computations for "roast beef" are averaged together. The same is done for "beef stew," "beef steak," etc., and some of these latter averages are incorporated in the table on pages 261 and 262, giving the percentages of nutrients in food-materials assumed in analyses of dietaries.

Composition of Different Parts of Beef.

Current number of dietary.	PORTION ("Cut") OF BEEF.	Protein.	Fat.
		Per cent.	Per cent.
A 7	Beef, hip sirloin,	12.5	16.6
A 7 and B 6	Beef, brisket, shoulder clod, and cross ribs,	13.9	25.9
A 7	Beef, socket and rump,	11.5	26.6
A 7	Beef, second cut, chuck ribs,	16.3	16.2
A 7	Beef, ribs,	11.9	28.3
B 1	Beef, top of sirloin and second cut of round,	13.4	24.0
B 4	Beef, top of sirloin,	12.9	42.1
B 5	Beef, plate, navel, and second cut of ribs,	12.4	30.6
B 10	Beef, shoulder clod, cross ribs, and top of sirloin,	14.1	29.4
B 12	Beef, rump,	12.2	37.0
B 13	Beef, plate and second cut ribs,	11.9	29.9
A 5	Roast beef, first cut, round,	17.9	12.3
A 8	Roast beef, second cut ribs, and third cut ribs,	11.6	27.9
A 10	Roast beef, shoulder clod and cross ribs,	14.6	23.0
A 13	Roast beef, second cut, chuck ribs,	16.3	16.2
	Roast beef, average,	15.1	19.9
A 4	Beef, roast and boiled, chuck ribs,	15.4	17.6
A 2	Beef steak, round,	16.8	10.6
A 4	Beef steak, first cut, chuck ribs,	13.7	23.0
A 5 and A 13	Beef steak, first cut, round,	17.9	12.3
A 8, A 9, A 11, and A 12	Beef steak, hip sirloin,	12.5	16.6
	Beef steak, average,	14.5	15.6
A 1 and A 2	Beef stew, shoulder clod and flank,	14.0	31.3
A 4	Beef, corned, brisket, plate, and top of sirloin,	11.4	31.9
A 5	Beef, corned, brisket, cross ribs, plate, and shoulder clod,	12.2	24.7
A 13	Beef, corned, brisket and plate,	11.3	28.8
A 9 and A 10	Beef, corned, brisket,	11.2	28.6

The figures used in calculating the amounts of nutrients in the dietaries are generally given in the table showing

the percentages of nutrients in food-materials assumed in analyses of dietaries. In some special cases, however, they are not given in this table but are stated with explanations in the explanatory notes appended to the details of the dietaries in which they are used.

To insure perfect accuracy it would, of course, be necessary to analyze the materials actually used in each case. It is probable that while divergences, in some cases very wide, might occur, the figures for the composition of each dietary, as a whole, would be substantially accurate.

The item about which there seems to be the most question is the quantity of fat in the meats, especially the beef. The analyses here used accord very closely with European figures for very fat beef.* Numerous observations, however, which cannot be detailed here but which seem to be but little short of decisive, imply that the beef commonly used on the continent of Europe is, on the average, less fat than the average beef in our markets. It is certain that much of that commonly used in our Eastern cities is very much fatter than that here analyzed and taken as the bases of these computations.

Attention has been called elsewhere to the fact that the figures for weights of food-materials in the dietaries represent the quantities purchased and do not indicate how much was eaten. The rejection of a considerable part of the fat of meats by many persons is one of the most common of dietary facts, at least in the Northern and Eastern States. Some of the fat of beef is left with the butcher, much goes to the soap maker and much more into the garbage. But a surprisingly large part of the fat of our beef is so diffused through the lean, much of it in invisible particles, that when we have cut out the larger pieces of fat from our roast beef or our steak and left them on our plates, we, nevertheless, eat the bulk of the actual fat of the meat with the lean and the small portions of visible fat which adhere to it.

Especial stress is laid on this point because the dietaries here studied indicate a remarkably large consumption of fat in this country. The possible bearing of this fact upon our national dietetics may be extremely important.

* König Nahrungsmittel, second edition, volume I., page 5.

Percentages of Nutrients in Food-Materials Assumed in Analyses of Diets.

[The figures of this table have been employed for estimating the amounts of nutrients in the diets, except in such cases as are hereinafter mentioned.]

FOOD-MATERIALS.	Protein.	Fats.	Carbohydrates.
<i>Meat, Fish, etc.</i>	Per cent.	Per cent.	Per cent.
Beef,	13.5	25.0	-
Beef, roast,*	15.1	19.9	-
Beef, roast and boiled,*	15.4	17.6	-
Beef steak,*	14.5	15.6	-
Beef stew,*	14.0	31.3	-
Beef, corned,*	11.5	23.5	-
Beef, tongue,	14.8	15.3	-
Beef, liver,	20.0	5.4	3.5
Beef, tripe,*	21.0	1.0	-
Veal,*	15.2	5.6	-
Mutton,	13.9	23.5	-
Mutton, fore-quarter,	13.6	23.8	-
Mutton, hind-quarter,	14.2	23.1	-
Mutton, leg,	15.0	15.5	-
Mutton chop,	14.2	23.1	-
Pork, roast,	11.4	36.2	-
Pork steak,	11.4	36.2	-
Pork, ham,	14.6	34.3	-
Pork, sausage,	13.2	39.1	-
Pork, salt,	2.8	76.5	-
Pork, corned,	10.7	39.7	-
Lard,	-	99.0	-
Fowl (chicken),	14.3	1.2	-
Cod,	11.0	0.3	-
Haddock,	8.3	0.1	-
Cod and haddock,	9.7	0.2	-
Mackerel,	10.1	3.9	-
Halibut,	15.1	4.2	-
Salt cod,	16.0	0.4	-
Salt mackerel,	14.7	15.1	-
<i>Eggs and Dairy Products.</i>			
Eggs,	11.6	10.2	0.6
Milk,	3.4	3.7	4.8
Cheese,	27.1	35.5	2.3
Butter,	1.0	87.5	0.5
<i>Vegetable Foods.</i>			
Wheat flour,	11.1	1.1	75.4
Graham flour,	11.7	1.7	69.9
Rye flour,	6.7	0.8	78.3
Barley,	8.4	0.7	77.8
Oatmeal,	15.1	7.1	67.2
Corn meal,	9.1	3.8	69.2
Tapioca,	0.6	-	86.0
Rice,	7.4	0.4	79.2
Beans,	23.2	2.1	53.7
Pease,	22.9	1.3	52.4
Potatoes,*	1.9	0.2	18.4
Turnips,*	0.9	0.2	5.1
Carrots,*	0.9	0.2	7.6
Cabbage,*	1.7	0.2	4.4
Cauliflower,*	2.0	0.3	4.0
Squash,*	0.5	0.1	5.3
Onions,*	1.0	0.2	7.5
Lettuce,	1.4	0.3	2.2
Beets,*	1.8	0.1	10.0
Green pease,	3.4	0.4	12.1
Pole beans (green),	2.3	0.3	10.0
Green corn,*	4.6	1.9	34.6
Tomatoes,	1.3	0.3	4.5
Apples,*	0.3	-	10.9
Cranberries,*	0.5	-	8.4
Corn starch,*	-	-	83.3

* These analyses are estimated from such data as are available. Those for beef have been previously explained (see table on page 259). Those for veal and for vegetable foods are computed from standard analyses by making allowance for assumed proportions of waste.

Percentages of Nutrients in Food-Materials, etc. — Concluded.

FOOD-MATERIALS.	Protein.	Fats.	Carbohy- drates.
	Per cent.	Per cent.	Per cent.
Sugar,	—	—	96.7
Molasses,	—	—	71.0
Syrup,	—	—	71.0
Raisins,	2.5	0.6	63.0
Dried currants,	2.5	0.6	63.0
Wheat bread,	8.9	1.9	55.5
Boston crackers,	10.7	9.9	68.7
Soda crackers,	10.3	9.4	70.5
Oyster crackers,	12.3	4.8	76.5

STANDARDS FOR DAILY DIETARIES.

The ordinarily accepted standards for dietaries are estimated in terms of the three most important classes of nutritive ingredients, or nutrients, of foods, namely, protein (or albuminoids), fats, and carbohydrates. The amounts of these appropriate for daily rations for different classes of people under different conditions have been estimated in two ways:

1. By observing the amounts actually consumed by people whose circumstances of life would permit reasonably good nourishment and at the same time preclude any considerable waste of food.

2. By direct experiments, in which the income and outgo of the body are directly compared. Our best information on this subject comes from Germany where studies have been made by numerous investigators, including Liebig, Moleschott, Ranke, Forster, and especially Voit. Payen, in France, and Frankland, Playfair, Lawes, and Gilbert, in England, have also made most valuable contributions to the knowledge of this subject.

The fact deserves mention, however, that very little attention appears to have been paid to the results of the latest and best research in this direction. Even the text-books in chemistry and physiology, which are looked upon as most authoritative, are too apt to pass the subject over most superficially or almost ignore it.

Rations Estimated from Dietaries. Perhaps the best way of illustrating the amounts of nutrients estimated to be actually consumed by different persons will be to give some examples. The following will serve the purpose. The weights are, for convenience, given in grams. It will be remembered that

about 454 grams equal a pound and 28.4 grams, an ounce, avoirdupois.

Nutrients in Daily Dietaries.

	DESCRIPTION.	Protein: total.	Protein: digesti- ble.	Fats.	Carbo- hydrates.
		Grams.	Grams.	Grams	Grams.
	<i>A. Poorly nourished.</i>				
1	Sewing girl, London, England: 1863. Wages, 93 cts. per week.	53	40	33	315
2	Weaver, Coventry, England.	60	43	28	398
3	Agricultural laborer, England.	96	73	48	517
4	Agricultural laborer, Ireland.	92	69	42	519
5	Agricultural laborer, Silesia; mostly vegetable food.	80	-	16	552
6	Seamstress, Leipsic, Germany.	56	47	50	229
7	Laborer, Leipsic, Germany.	-	56	37	290
8	Laborer, Hildesheim, Germany; diet mostly potatoes.	86	-	13	610
9	Monk in cloister; diet of bread, beer, soup, and vegetables.	68	-	11	469
	<i>B. Well nourished.</i>				
10	"Well-fed" tailor, England.	131	-	39	524
11	Weaver, at hard work, England.	151	-	43	621
12	Blacksmith, England.	176	-	71	666
13	Prize fighter, England; diet mostly meat.	288	-	88	93
14	Average for adults, moderate exercise, England (Play-fair's estimate).	120	-	40	530
15	Average for hard working laborer, England (Play-fair's estimate).	160	-	66	579
16	Mechanic, 60 years old, Munich, Germany.	117	-	68	345
17	Serving man, 36 years old, Munich, Germany.	133	-	95	422
18	Mechanic, 40 years old, Munich, Germany.	131	-	68	494
19	Well paid mechanic, Munich, Germany.	151	-	54	479
20	Physician, Munich, Germany.	134	-	102	291
21	University professor, Munich, Germany; very little muscular exercise.	100	-	100	220
22	Privy Councillor, Marburg, Germany; very little muscular exercise.	90	-	79	285
23	Brewery laborer, Munich, Germany; severe labor.	190	-	73	600
24	Lumberman, Bavaria; diet of fat and flour (bread).	112	-	309	691
25	German soldier, peace footing.	117	-	26	547
26	German soldier, war footing.	151	-	46	522
27	German soldier, war footing, extraordinary ration.	191	-	63	607

Numbers 1 to 8 represent quantities of food consumed by very poor people and are not adequate for healthful nourishment. That of the seamstresses may be regarded as barely sufficient to sustain life. All these, it will be noticed, are especially deficient in protein.

Number 9, that of a monk in a cloister, whose habits were such as to involve little muscular or other exertion, was, doubtless, not so far short of the needs of the body.

All the rest, those of moderately and well-fed persons, except numbers 21 and 22, contain more protein and usually more fat. In general, the larger the income or the more severe the labor the greater is the consumption of protein. The variations are, however, very wide and individual exceptions numerous. Note, for instance, the English prize fighter,

with his diet of meat, and the Bavarian lumberman, who has little else than bread and fat. Their dietaries furnish daily :

DESCRIPTION.	Protein.	Fats.	Carbohydrates.
	Grams.	Grams.	Grams.
Prize fighter,	288	88	93
Lumberman,	112	309	691

These are extreme, and indeed abnormal, cases. The majority approach reasonably near to each other, as may be observed in numbers 10, 14, 16, 17, 18, 19, and 25, which are rations of ordinary men with moderate muscular exercise, and numbers 11, 12, 15, 23, and 26, which are those of persons of whom severe labor is required. Numbers 21 and 22 have smaller amounts of protein, but they are dietaries of persons with presumably little muscular exercise. Number 27, on the other hand, which is very heavy in protein, is a ration for a soldier in extra hard marching and fighting.

Direct Experiments in which the Income and the Outgo of the Body are Compared. Experiments of this sort are made by supplying individuals with food of known amount and composition and determining the quantity and composition of the products given off from the body. The most interesting and valuable researches of this class are those with the respiration apparatus. This permits the keeping of an accurate account of all the items of income and outgo, the food, drink, and inhaled air, which make up the former, and the solid and liquid excreta and exhaled air, which make up the latter, being measured, weighed, and analyzed. The experiments involve an immense amount of labor but bring correspondingly complete and reliable results. A discussion of them here would, however, be out of place.

It is sufficient to say that from the data obtained from the two sources named, the estimates of composition of dietaries and the direct experiments, various standards for daily rations have been computed. The standard rations assumed by Prof. Voit and the Munich school of physiological chemists are more commonly accepted than any others, and are most

frequently followed in estimating dietaries. The following are examples :

Standards for Daily Dietaries.

CLASSIFICATION.	Protein.	Fats.	Carbohydrates.
	Grams.	Grams.	Grams.
Children to 1½ years,	20 to 36	30 to 45	60 to 90
Children from 6 to 15 years,	70 to 80	37 to 50	250 to 400
Laboring man at moderate work,	118	56	500
Laboring man at severe work,	145	100	450
Laboring woman,	92	44	400
Aged man,	100	68	350
Aged woman,	80	50	260

We are, of course, to understand that these figures represent only general averages. It is assumed that for an ordinary laboring man, doing an ordinary amount of work, the amounts of nutrients above stated will suffice, that with them he will hold his own, and that any considerable excess above these quantities will be superfluous. Of course, no one expects any given man to adjust his diet exactly to this standard. He may need more, and may perhaps get on with less. He may eat more fats and less carbohydrates, or he may consume more protein, if he is willing to pay for it. If, however, he has much less protein, and keeps up his muscular exertion, he will be apt, sooner or later, to suffer.

Of course different individuals, though subjected to like conditions, will both require and consume different quantities of nutrients. In general the larger the person, that is, the more bulk of machinery there is in the organism, the more of protein and other nutrients will be consumed. Hence men need on the average more than women and children. The requirements vary with the muscular activity. A man at hard work requires more of protein and of other nutrients than one at lighter work or rest. Aged people, who are generally less active than those in the prime of life, require less food and less protein. But we shall probably not go very far amiss in adopting these standards. One point, however, demands special consideration.

ESTIMATES OF COMPARATIVE QUANTITIES OF NUTRIENTS
REQUIRED BY PERSONS OF DIFFERENT CLASSES.

Since the people nourished by the dietaries here examined differ in age, sex, and occupation, and hence differ likewise in their demands for nutriment, and since a chief object of the examination is to compare the dietaries with one another in respect to the quantities of actual nutrients supplied, it is clear that to attain our object we need some standard for estimating the relative demands of people of different classes. If, for instance, we could take a particular class, as laboring men at moderate work, and find to how many average men of this class the people nourished by each dietary would be equivalent in their demands for nutrients, we should simply have to divide the total quantity of nutrients supplied per day by this equivalent number of men to get the quantities per man per day. The results thus obtained for the several dietaries would, when compared with each other and with accepted standards, give us what we seek.

We are of the opinion that the experimental data on record in European works, if rightly collated and worked up, would give a basis for at least an approximate estimate of the comparative requirements of the several classes of persons into which those nourished by the food of these dietaries would most properly be divided. Indeed, the figures cited in the table of standards for daily dietaries will help in arriving at such a basis. Thus we have :

Quantities of Nutrients Appropriate for Daily Dietaries.

PERSONS.	Protein.	Fats.	Carbohydrates.
	Grams.	Grams.	Grams.
Children to 1½ years old,	28	37	75
Children, 6 to 15 years old,	75	43	325
Woman at ordinary work,	92	44	400
Laboring man at moderate work, . . .	118	56	500

Late research has thrown considerable light upon equivalent values of these three classes of nutrients for at least a part of their work in the body. The proportions in which they replace each other in the performance of functions they have

in common, as indicated by experiments with animals in the respiration apparatus, in Munich, agree almost exactly with the figures representing their quantities of potential energy as shown by burning the same materials in the calorimeter. On the basis of extended experiments of both the kinds named it has been estimated* that the average amounts of potential energy in the three principal classes of nutrients are, approximately :

In 1 gram of protein,	. . . . .	4.1 calories
“ “ “ “ fats,	. . . . .	9.3 “
“ “ “ “ carbohydrates,	. . . . .	4.1 “

On this basis the potential energy in the nutrients of the dietaries assumed as standards would be :

Children to 1½ years,	. . . . .	767 calories
Children, 6 to 15 years,	. . . . .	2,041 “
Woman at ordinary work,	. . . . .	2,426 “
Laboring man at moderate work,	. . . . .	3,055 “

These figures are in about the following relative proportions. We interpolate an assumed value for children from 6 to 2 years of age.

*Estimated Relative Quantities of Potential Energy in Nutrients
required by Persons of Different Classes.*

Laboring man at moderate work,	. . . . .	10
Woman at ordinary work,	. . . . .	8
Child, 15 to 6 years old,	. . . . .	7
Child, 6 to 2 years old,	. . . . .	5
Child, under 2 years old,	. . . . .	2½

The application of these figures is simple. The food of dietary A1, for instance, suffices for 77 persons (factory operatives), 66 males and 11 females. The figures allot to one working woman 0.8 as much nutritive material as to one laboring man at moderate work. This would make the 11 women equivalent to (8.8) 9 men, which added to 66 would make the

* By Rubner. Zeitschrift für Biologie, volume 21, 1885, page 377.

whole 77 persons equal to 75 men. The 77 persons during 30 days, the time covered by the dietary, would be equal in requirements to one man for 2,250 days. The estimates in the dietaries hereinafter presented are made in this way.

DETAILS OF DIETARIES.

The tables on pages 269-305, as previously stated, contain details of a number of dietaries selected from a much larger number collected by the Bureau in the early Fall of last year. Besides the fifteen dietaries, five for each series, for which the details are used in the analyses tables on pages 305-310, *post*, the remaining dietaries here given in detail have been also examined and the quantities of nutrients determined, but the results are included only in the averages contained in the analyses tables. The numbers are as follows :

CLASSIFICATION.	A. Miscellaneous, Massachusetts.	B. French Canadian, Massachusetts.	C. French Canadian, Canada.
Given in detail, and used in the analyses tables,	5	5	5
Given in detail, but included in the averages only,	5*	2*	8
Not used,	5	12	14
Totals,	15	19	27

* Series A included three French Canadian dietaries which are averaged with those of series B, making 10 of the latter, all told, in the averages of series B in the tables on pages 306-310.

Some of the quantities of nutrients have been calculated from measures to weights in accordance with the following tabular statement. A few minor alterations and additions are explained in the notes appended to the several tables of dietaries. Otherwise no material changes other than those of form of statement have been introduced in transcribing.

Equivalent Measures and Weights.

ARTICLES.	Basis.	Equivalent in Weight.	
		Lbs.	Ozs.
Potatoes, beets, turnips, and tomatoes,	bushel	60	-
Beans* and pease,	bushel	60	-
Beans and pease,	quart	1	14
Apples,	barrel	150	-
Onions,	bushel	52	-
Molasses,	gallon	11	-
Syrup,	gallon	12	-
Milk,	quart	2	-
Eggs,†	dozen	1	6

* 60-62 lbs.

† In Canada, 1 lb. 8 oz. per dozen.

Series A. Miscellaneous, Massachusetts.

The five dietaries of this series which are given in detail and used in the analyses tables include three of boarding-houses and two of families in Lowell, Lynn, East Cambridge, and Boston. Two more of boarding-houses, one in Lowell and one in Lawrence, are also given in detail, but the results are included only in the averages, for this series, in the analyses tables. The results for three dietaries of French Canadian families in North Cambridge, of this series, are also included in the averages for series B in the analyses tables. The persons are factory and mill operatives, mechanics, etc., with a few clerks and dressmakers. With these statements and the explanatory notes accompanying the several schedules, further explanations will not be needed.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohydrates.
	cents.	lbs.		lbs.	lbs.	lbs.
Beef, roast,	10	400	\$40 00	90.4	79.9	-
Beef steak,	14	272	38 08	39.4	42.4	-
Beef, corned,	7	350	24 50	40.3	99.8	-
Beef tongue,	10	62	6 20	9.2	9.5	-
Beef stew,	5	167	8 35	23.4	52.3	-
Beef, tripe,	6	20	1 20	4.2	0.2	-
Pork, roast,	10	150	15 00	17.1	54.3	-
Ham,	11	160	17 60	23.4	54.9	-
Salt pork,	10	70	7 00	2.0	53.6	-
Lard,	8	260	20 80	-	257.4	-
Haddock,	7	168	11 76	13.9	0.2	-
Hallibut,	12	50	6 00	7.6	2.1	-
Mackerel,	3	40	1 20	4.0	1.6	-
Salt fish (cod),	4½	50	2 25	8.0	0.2	-
Total meats, fish, etc.,		2,219	\$199 94	252.9	708.4	-
Milk,	2	3,024	\$60 48	102.8	111.9	145.2
Cheese,	11	63.5	6 98	17.2	22.5	1.5
Butter,	22 and 10	291	54 54	2.9	254.6	1.5
Eggs,	14	107	14 82	12.4	10.9	0.6
Total dairy products and eggs,		3,485.5	\$136 82	135.3	399.9	148.8
Flour,	3	1,568	\$47 04	174.0	17.2	1,182.3
Sugar,	7½	600	45 00	-	-	580.2
Molasses,	4½	99	4 50	-	-	70.3
Beans,	3	124	3 74	28.8	2.6	66.6
Rice,	8	25	2 00	1.9	0.1	19.9
Oatmeal,	4	25	1 00	3.8	1.8	16.8
Potatoes,	1	2,520	25 20	47.9	5.0	463.7
Squash,	1½	250	3 75	1.3	0.3	13.3
Onions,	2	26	50	0.3	-	2.0
Beets,	5-9	90	50	1.6	0.1	9.0
Turnips,	5-6	120	1 00	1.1	0.2	6.1
Tomatoes,	5-6	120	1 00	1.6	0.4	5.4
Apples,	1¾	300	5 00	0.9	-	32.7
Raisins,	12½	24	3 00	0.6	0.1	15.1
Currants,	10	15	1 50	0.3	-	9.5
Corn starch,	9	12	1 08	-	-	11.0
Crackers,	5	48	2 40	5.1	4.8	34.0
Total vegetable food,		5,966	\$148 21	269.2	32.6	2,537.9
Total animal food,		5,704.5	336 76	388.2	1,108.3	148.8
Total food,		11,670.5	\$484 97	657.4	1,140.9	2,686.7
Meats, fish, etc., per man per day, . . . . .		.99	\$0 09	.11	.31	-
Dairy products and eggs, per man per day,		1.55	06	.03	.18	.07
Animal food, per man per day,		2.54	\$0 15	.17	.49	.07
Vegetable food, " "		2.65	07	.12	.01	1.13
Total food, " "		5.19	\$0 22	.29	.50	1.20

The "Beef, roast" and "beef steak" in this dietary were both from the round, the latter from the uppermost, and the

former from the next lower part, but both included in what is called in our analyses "first cut, round," the composition of which is, accordingly, assumed for both. The quantity of cabbages is stated at 4 barrels, costing \$4.00. It is assumed that the weight would be 150 pounds per barrel, or 600 pounds in all, which would make the price $\frac{2}{3}$ cents per pound.

DIETARY NUMBER, A 7.

Description: Boarding-house in Lynn, Mass., of 36 persons, 20 males and 16 females. Boarders, operatives in shoe factory, clerks, and dressmakers. Time, one month. Estimated as equivalent in demands for nutrients to 33 men for 30 days, or 1 man for 990 days.

ANALYSIS.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohydrates.
	cents.	lbs.		lbs.	lbs.	lbs.
Beef, hip sirloin,	28	114.8	\$32 13	14.4	19.1	-
Beef, socket and rump,	20	20	4 00	2.3	5.3	-
Beef, second cut, chuck ribs, . .	10 $\frac{1}{2}$	79	8 29	12.9	12.8	-
Beef, second cut, chuck ribs, . .	11	42.3	4 65	6.9	6.9	-
Beef, ribs,	16	14	2 24	1.7	4.0	-
Beef, brisket, shoulder clod, and cross ribs,	8	143.5	11 48	19.0	37.2	-
Mutton,	21 $\frac{1}{2}$	21	4 52	3.2	3.3	-
Veal,	16	14.7	2 36	2.2	0.8	-
Salt pork,	11	25	2 75	0.7	19.1	-
Lham,	12	60	7 20	8.8	20.6	-
Lard,	10	57	5 70	-	56.4	-
Haddock,	6	25	1 50	2.1	-	-
Halibut,	12	50	6 00	7.6	2.1	-
Salt fish (cod),	4 $\frac{1}{2}$	40	1 80	6.4	0.2	-
Total meats, fish, etc.,		706.3	\$94 62	89.1	187.8	-
Eggs (64 doz. at 20 cts.), . . .	14 $\frac{1}{2}$	88	\$12 80	10.2	9.0	0.5
Milk (352 qts. at 6 cts.), . . .	3	704	21 12	23.9	26.1	33.8
Cheese,	12	20	2 40	5.4	7.1	0.5
Butter,	23	89	20 47	0.9	77.9	0.5
Total dairy products and eggs,		901	\$56 79	40.4	120.1	35.3
Flour,	3	490	\$14 70	54.4	5.4	369.5
Rye meal,	4	25	1 00	1.7	0.2	19.6
Oatmeal,	3	30	90	4.5	2.1	20.2
Rice,	10	2	20	0.1	-	1.6
Beans (15 qts.),	3 $\frac{3}{4}$	33.7	1 26	7.8	0.7	18.1
Potatoes (21 bush. at 67 cts.), .	1 $\frac{1}{2}$	1,260	11 07	23.9	2.5	231.8
Turnips (1 bush.),	1 $\frac{3}{4}$	60	1 00	0.5	0.1	3.1
Cabbage (8 heads at 8 cts.), . .	3 $\frac{3}{4}$	36	48	0.6	0.1	1.6
Onions (1 pk.),	2	13	25	0.1	-	1.0
Beets (2 bush.),	2 $\frac{3}{4}$	120	80	2.2	0.1	12.0
Green peas (8 bush.),	6	200	12 00	6.8	0.8	24.4
Pole beans (5 bush.),	4	150	6 00	4.2	0.5	15.0
Green corn (24 doz. ears at 12 cts.),	2 $\frac{3}{4}$	108	2 88	5.0	2.1	37.4
Apples (4 bbls.),	2	600	12 00	1.8	-	65.4
Corn starch,	8	12	96	-	-	10.0
Sugar,	6 $\frac{1}{2}$	204	13 26	-	-	197.3
Molasses (2 gals.),	3 $\frac{3}{4}$	22	80	-	-	15.6
Raisins,	10	15	1 50	0.4	0.1	9.5

DIETARY NUMBER, A 7—Concluded.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohydrates.
	cents.	lbs.		lbs.	lbs.	lbs.
Crackers, oyster, . . .	5	24	\$1 20	3.0	1.2	18.4
Crackers, Boston, . . .	10	36	3 60	3.9	3.6	24.7
Total vegetable food, . . .		3,440.7	\$88 86	120.9	19.5	1,096.2
Total animal food, . . .		1,607.3	151 41	129.5	307.9	35.3
Total food, . . .		5,048.0	\$240 27	250.4	327.4	1,131.5
Meats, fish, etc., per man per day, . . .		.71	\$0 10	.09	.19	-
Dairy products and eggs, per man per day, . . .		.91	05	.04	.12	.04
Animal food, per man per day, . . .		1.62	\$0 15	.13	.31	.04
Vegetable food, " " . . .		3.48	09	.12	.02	1.11
Total food, " " . . .		5.10	\$0 24	.25	.33	1.15

This dietary includes 24 dozen ears of green corn at 12 cents per dozen; 6 heads of cabbage at 8 cents per head; 8 bushels of green pease at \$1.50 per bushel, and 6 bushels of pole beans at \$1.00 per bushel.

The amounts of nutrients contained in these articles are estimated as follows: The ears of green corn are reported as weighing from $\frac{1}{4}$ pound to $\frac{1}{2}$ pound each. Taking $\frac{3}{8}$ pound as the average the 288 ears would weigh 108 pounds. A few analyses of "immature sweet corn" have been reported,* but, unfortunately, neither the proportion of kernel to cob nor the percentages of water in the kernel in the fresh state are given.

The composition of the air-dry kernel of a specimen harvested August 25th, in the condition in which it is commonly eaten for "green corn," was, however, nearly the same as that of the same corn harvested when mature, September 25th. The kernels of matured corn, in general, average about four-fifths of the weight of the whole ear, though the kernel of a specimen of sweet corn has been observed to make only about three-fourths of the weight of the ear.† A specimen of mature Ohio Dent corn was observed to shrink from about 125 pounds, when harvested, to 100 pounds when air-dry, and to contain

* By Johnson and Jenkins. Report of Connecticut Agricultural Experiment Station, 1878, pp. 59 and 68.

† *Ibid.*, page 74.

in the latter condition 10.8 per cent of water. Supposing the air-dry ears to have contained one-fifth by weight of cob, the 100 pounds of air-dry corn would have been contained in 125 pounds of air-dry ears. If kernel and cob both had lost in the same proportion in drying, that is, about one-fifth, making the air-dry ears four-fifths the weight of the fresh ears, the 125 pounds of air-dry ears, thus computed to furnish 100 pounds of corn, would have weighed when harvested 156 pounds. In other words, 156 pounds of the ears as harvested would have furnished 100 pounds of air-dry kernels, or 100 pounds of ears as harvested would supply 64 pounds of air-dry corn. Very likely as good a guess would be that 100 pounds of ears of green corn would furnish 50 pounds of air-dry kernels as any that could be afforded by these data. Though the sweet corn, so commonly used for green corn, is, as already stated, somewhat different in composition from ordinary corn and from the meal ground from it, we shall in the lack of more definite data estimate the ears of green corn as furnishing nutrients equivalent to those of half their weight of average corn meal. This is done here and elsewhere where sweet corn occurs. That is to say, the 288 ears of sweet corn of this dietary are computed to weigh $\frac{3}{4}$ of a pound each, or 108 pounds, and to be equivalent to 54 pounds of corn meal of the composition stated in the table of assumed composition of foods.

With less data for the estimate, we have taken the bushel of green pease and the bushel of pole beans as each furnishing 25 pounds of seeds and have assumed for both the composition of "sugar pea," reported by S. Moulton Babcock.*

* Report of New York Agricultural Experiment Station, 1884, page 333.

DIETARY NUMBER, A 9.

Description: Family in Boston, Mass., of 2 persons, husband and wife. Husband, a machinist, with \$19.50 per week wages. Time, one month. Estimated as equivalent in demands for nutrients to 1.8 men at moderate work for 30 days, or 1 man for 54 days.

ANALYSIS.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohydrates.
	cents.	lbs.		lbs.	lbs.	lbs.
Beef steak,	28	28	\$7 84	4.1	4.4	-
Beef, corned,	12	10	1 20	1.2	2.9	-
Lamb chop,	15	6	90	0.9	1.4	-
Salt pork,	12	2.5	30	0.1	1.9	-
Lard,	11	5	55	-	5.0	-
Halibut,	13	10	1 30	1.5	0.4	-
Mackerel,	5	12	60	1.2	0.5	-
Total meats, fish, e'tc.,		73.5	\$12 69	9.0	16.5	-
Eggs,	16	8.3	\$1 32	1.0	0.8	0.1
Milk,	3 1/2	70	2 45	2.4	2 6	3.4
Cheese,	13	2.5	32	0.7	0.9	0.1
Butter,	30	8	2 40	0.1	7.0	-
Total dairy products and eggs,		88.8	\$6 49	4.2	11.3	3.6
Flour,	4	30	\$1 20	3.3	0.3	22.6
Beans,	6	3.7	20	0.9	0.1	2.0
Rice,	8	1	08	0.1	-	0.8
Potatoes,	11 1/4	30	38	0 6	0.1	5.5
Apples,	12 3/4	15	25	-	-	1.6
Vegetables,	-	112.6	2 60	2.1	0.3	9.7
Sugar,	7 1/2	18	1 35	-	-	17.4
Molasses,	6	1.5	09	-	-	1.1
Corn starch,	10	0.5	05	-	-	0.4
Raisins,	12	1	12	-	-	0.6
Crackers,	4	12	48	1.3	1.2	8.2
Total vegetable food,		225.3	\$6 20	8.3	2.0	69.9
Total animal food,		162.3	19 18	13.2	27.8	3.6
Total food,		387.6	\$25 38	21.5	29.8	73.5
Meats, fish, etc., per man per day,		1.36	\$0 24	.17	.31	-
Dairy products and eggs, per man per day,		1.64	12	.08	.21	.07
Animal food, per man per day,		3.00	\$0 36	.25	.52	.07
Vegetable food, " "		4.17	11	.15	.04	1.29
Total food, " "		7.17	\$0 47	.40	.56	1.36

In numbers A 9 and A 11, the kinds and quantities of vegetables are not given, the cost only being stated. The quantities are, however, small, so that even a considerable error might be made in estimating the quantities of nutrients without materially affecting the final result. An estimate has been made by the same method as was followed in A 14, A 15, and A 16, taking as data the kinds, amounts, and costs of vegetables in the other dietaries of this series (exclusive of

DIETARY NUMBER, A 13.

Description: Boarding-house in Lawrence, Mass., of 80 persons, 40 males and 40 females. Boarders, mill operatives. Price of board per week for males, \$3.00; for females, \$2.00. Estimated to require nutrients equal to 72 men at moderate work for 30 days, or 1 man for 2,160 days.

ANALYSIS.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohydrates.
	cents.	lbs.		lbs.	lbs.	lbs.
Beef, roast,	8	275	\$22 00	44.8	44.6	-
Beef, corned,	8	291	23 23	32.9	83.8	-
Beef steak,	14	263	36 82	47.0	32.3	-
Beef tongue,	16	14.3	2 23	2.1	2.2	-
Veal,	11	111.5	12 26	16.9	6.2	-
Lamb, roast,	10	56	5 60	7.6	13.3	-
Ham,	10	186	18 60	27.1	63.8	-
Sausage,	10	10	1 00	1.3	3.9	-
Pork, roast,	8½	254	21 59	28.9	91.9	-
Salt pork,	10	50	5 00	1.4	38.3	-
Lard,	9	135	12 15	-	133.7	-
Haddock,	6	160	9 60	13.3	0.2	-
Halibut,	12	75	9 00	11.3	3.2	-
Salt fish (cod),	4½	30	1 35	4.8	0.1	-
Total meats, fish, etc.,		1,910.8	\$180 53	239.4	517.5	-
Eggs (160 doz. at 16 cts.),	11½	220	\$25 60	25.5	22.4	1.3
Milk (1,579 qts. at 4 cts.),	2	3,140	62 80	105.6	116.2	150.7
Butter,	13	262.5	34 12	2.6	229.7	1.3
Cheese,	10	44	4 40	11.9	15.6	1.0
Total dairy products and eggs,		3,666.5	\$126 92	146.6	383.9	154.3
Flour,	3	784	\$23 52	87.0	8.7	591.1
Oatmeal,	3	80	2 40	12.1	5.7	53.8
Tapioca,	7	10	70	0.1	-	8.5
Beans (72 qts. at 6 cts.),	3 1-5	135	4 32	31.3	2.8	72.5
Rice,	7	5	35	0.4	-	4.0
Potatoes (60 bush. at 55 cts.),	11-12	3,600	33 00	68.4	7.2	662.4
Squash,	3	61.5	1 85	3.1	0.1	3.3
Lettuce (27 heads at 2½ cts.),	5	13.5	67	0.2	-	0.3
Onions (½ bush.),	4	26	1 00	0.3	0.1	2.0
Tomatoes (1 bush.),	2½	60	1 40	0.8	0.2	2.7
Green corn (20 doz. ears at 14 cts.),	3 1-9	90	2 80	4.1	1.7	31.1
Apples (2 bbls. at \$2.50),	1½	300	5 00	0.9	-	32.7
Sugar,	7½	804	60 30	-	-	777.5
Molasses (8 gals. at 28 cts.),	2½	88	2 24	-	-	62.5
Raisins,	9	30	2 70	0.8	0.2	18.9
Total vegetable food,		6,087	\$142 25	209.5	26.7	2,323.3
Total animal food,		5,577.3	307 45	386.0	901.4	154.3
Total food,		11,664.3	\$449 70	595.5	928.1	2,477.6
Meats, fish, etc., per man per day, . . . . .		.83	\$0 08	.11	.24	-
Dairy products and eggs, per man per day,		1.70	06	.07	.18	.07
Animal food, per man per day,		2.58	\$0 14	.18	.42	.07
Vegetable food, " "		2.81	07	.10	.01	1.03
Total food, " "		5.39	\$0 21	.28	.43	1.15

This dietary includes 20 dozen ears of corn at 14 cents per dozen, and 27 heads of lettuce at $2\frac{1}{2}$ cents per head. On the basis of information obtained from dealers the corn is estimated to weigh from $\frac{1}{4}$ pound to $\frac{1}{2}$ pound per ear and the lettuce $\frac{1}{2}$ pound per head. Taking $\frac{3}{8}$ pound for the average weight of the ears of corn the 240 ears would weigh 90 pounds and the corn on them would be equivalent to 45 pounds of corn meal.

DIETARY NUMBER, A 14.

Description: French Canadian family in North Cambridge, Mass., consisting of 4 persons, father, mother, and two children of 2 and 3 years respectively. The father is employed in a brick yard, at severe labor. Wages, \$30 per month. Time, one month. The two children are taken as equivalent to one woman, making the family equivalent in demands for nutrients to 2.6 men at moderate work for 30 days, or 1 man for 78 days.

ANALYSIS.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohydrates.
	cents.	lbs.		lbs.	lbs.	lbs.
Pork, steak,	10	22	\$2 20	2.5	8.0	-
Pork, corned, shoulder, . .	10	25	2 50	2.7	9.9	-
Pork, salt,	10	8	80	0.2	6.1	-
Lard,	10	5	50	-	5.0	-
Salt fish (cod),	$4\frac{1}{2}$	10	45	1.6	-	-
Total meats, fish, etc., . .		70	\$6 45	7.0	29.0	-
Milk,	$3\frac{1}{2}$	40	\$1 40	1.4	1.5	1.9
Eggs,	16	6.3	99	0.7	0.6	-
Butter,	28	9	2 52	0.1	7.9	-
Total dairy products and eggs,		55.3	\$4 91	2.2	10.0	1.9
Flour,	$3\frac{1}{2}$	55	\$1 92	6.1	0.6	41.5
Beans,	$5\frac{1}{2}$	7.5	40	1.7	0.2	4.0
Rice,	8	5	40	0.4	-	4.0
Potatoes,	1 1-12	120	1 30	2.3	0.2	22.1
Vegetables,	-	199.4	2 50	2.8	0.4	10.3
Sugar,	8	26	2 03	-	-	25.1
Molasses,	$4\frac{1}{2}$	27.5	1 25	-	-	19.5
Total vegetable food, . . .		440.4	\$9 85	13.3	1.4	126.5
Total animal food, . . .		125.3	11 36	9.2	39.0	1.9
Total food,		565.7	\$21 21	22.5	40.4	128.4
Meats, fish, etc., per man per day, . . . . .		.90	\$0 08	.09	.37	-
Dairy products and eggs, per man per day, . . . . .		.71	06	.03	.13	.03
Animal food, per man per day, . . .		1.61	\$0 14	.12	.50	.03
Vegetable food, " " . . .		5.65	13	.17	.02	1.62
Total food, " " . . .		7.26	\$0 27	.29	.52	1.65

DIETARY NUMBER. A 16 — Concluded.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohydrates.
	cents.	lbs.		lbs.	lbs.	lbs.
Eggs (4½ doz. at 19 cts.), . .	14	6.2	\$0 86	0.7	0.6	—
Milk (20 qts. at 7 cts.), . .	3½	40	1 40	1.4	1.5	1.9
Butter,	25	5	1 25	0.1	4.4	—
Cheese,	12	4	48	1.1	1.4	0.1
Total dairy products and eggs,		55.2	\$3 99	3.3	7.9	2.0
Flour,	3¼	65	\$2 11	7.2	0.7	49.0
Potatoes (1 bush. at 70 cts.), .	1 1-6	60	70	1.1	0.1	11.0
Beans (3 qts. at 9 cts.), . .	5	5.6	27	1.3	0.1	3.0
Rice,	8	2	16	0.1	—	1.6
Vegetables,	—	79.7	1 00	1.2	0.1	4.1
Sugar,	6	15.5	93	—	—	15.0
Molasses, (1 gal.),	5¼	11	60	—	—	7.3
Raisins,	12	2	24	0.1	—	1.3
Crackers,	5	10	50	1.1	1.0	6.9
Total vegetable food,		250.8	\$6 51	12.1	2.0	99.7
Total animal food,		99.7	8 92	7.2	26.9	2.0
Total food,		350.5	\$15 43	19.3	28.9	101.7
Meats, fish, etc., per man per day, . . . . .		.49	\$0 06	.04	.21	—
Dairy products and eggs, per man per day, . . . . .		.61	01	.04	.09	.02
Animal food, per man per day,		1.10	\$0 10	.08	.30	.02
Vegetable food, “ “		2.79	07	.13	.02	1.11
Total food, “ “		3.89	\$0 17	.21	.32	1.13

In numbers A 14, A 15, and A 16 the costs of the vegetables are given without statement of the kinds and quantities. As these are all of French Canadian families it may not be far out of the way to assume that the vegetables would be similar to those of series B which are, likewise, dietaries of French Canadians in Massachusetts. By a computation, of which the details would be too lengthy for this place, the kinds, quantities, and costs of the vegetables of the dietaries of series B have been taken and an estimate has been made of the average quantities of vegetables (cabbages, onions, turnips, squash, etc.,) obtained for one dollar and the amounts of nutrients in each, and in the whole dollar's worth. The estimated total quantities (of vegetables) and quantities of nutrients are stated in A 16 in which the vegetables cost \$1.00. In A 14 in which the cost of the vegetables was \$2.50, or 2½ times the cost in A 16, and in A 15 in which the vegetables cost \$2.00, or twice the cost in A 16, these quantities are assumed.

Series B. French Canadian, Massachusetts.

The five dietaries of this series which are used in the analyses tables include those of three families and two boarding-houses in Holyoke, Lawrence, and Lowell. Of those included only in the averages, two were of families in Worcester, of this series, and three of families in East Cambridge, of series A. With the exception of women, children, and others engaged in household duties, or in no actual labor, the people are mostly mill and factory operatives; a few are brickmakers.

DIETARY NUMBER, B 1.

Description: French Canadian family in Lawrence, Mass., consisting of father, mother, and four children, a daughter of 17½ and three sons, 16, 19, and 21 years of age, respectively, making, in all, 6 adults, 4 males and 2 females, of which the four children are mill operatives, the father and mother doing no considerable amount of outside work. The sons earn from \$1.25 to \$1.75 per day, and the daughter 90 cents. Time, one month. Estimated as equivalent in demands for food to 5½ laboring men for 30 days, or 1 man for 165 days.

ANALYSIS.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohy- drates.
	cents.	lbs.		lbs.	lbs.	lbs.
Beef,	-	68	\$20 00	9.1	16.5	-
Pork, fresh,	-	42		4.8	15.2	-
Salt pork,	-	14		0.4	10.7	-
Lard,	9	10	90	-	9.9	-
Fish (salt mackerel),	10	17.5	1 75	2.6	2.6	-
Total meats, fish, etc.,		151.5	\$22 65	16.9	54.9	-
Eggs (10 doz. at 20 cts.),	14½	13.8	\$2 00	1.6	1.4	0.1
Milk,	3 2-5	88	3 00	3.0	3.3	4.2
Butter,	28	8	2 25	0.1	7.0	-
Total dairy products and eggs,		109.8	\$7 25	4.7	11.7	4.3
Flour,	4 1-56	112	\$4 50	12.4	1.2	84.4
Beans (5 qts. at 10 cts.),	5½	9.4	50	2.2	0.2	5.0
Pease (3 qts. at 8½ cts.),	4½	5 6	25	1.3	0.1	2.9
Barley,	6½	5.5	36	0.5	-	4.3
Rice,	8	5.5	44	0.4	-	4.4
Potatoes,	1½	120	1 75	2.3	0.2	22.0
Apples,	1½	75	1 25	0.2	-	8.2
Vegetables,	-	110	1 50	1.0	0.1	6.7
Corn starch,	10	3	30	-	-	2.5
Molasses and syrup,	7-10	17.3	1 25	-	-	12.3
Sugar,	7½	30	2 30	-	-	29.0
Raisins and currants,	12½	4	50	0.1	-	2.5
Total vegetable food,		497.3	\$14 90	20.4	1.8	184.2
Total animal food,		261.3	29 90	21.6	66.6	4.3
Total food,		758.6	\$44 80	42.0	68.4	188.5
Meats, fish, etc., per man per day, . . . . .		.92	\$0 14	.10	.33	-
Dairy products and eggs, per man per day, . . . . .		.66	04	.03	.07	.03
Animal food, per man per day,		1.58	\$0 18	.13	.40	.03
Vegetable food, " " " "		3.01	09	.12	.01	1.12
Total food, " " " "		4.59	\$0 27	.25	.41	1.15

The meat is given as 124 lbs., costing \$20.00, and is stated in an explanatory note to be about 50 or 60 per cent of beef and the remainder pork, of which one-fourth is fresh and three-fourths salt. The fish is inferred to be salt mackerel. The vegetables stated to cost \$1.50 are said to consist of cabbages, about 40 per cent; onions, 20 per cent; turnips, 10 per cent; carrots, 5 per cent; the remainder, 25 per cent, varying with the season.

The following quantities of vegetables at the prices assumed would cost \$1.50 :

VEGETABLES.	Per cent.	Quantity.	Price per lb.	Cost.
		lbs.	cts.	
Cabbages,	40	44	1 $\frac{1}{4}$	\$0 55
Onions,	20	22	2	44
Turnips,	10	11	1	11
Carrots,	5	5	1	05
Remainder,	25	28	1 $\frac{1}{4}$	35
Totals,	100	110	-	\$1 50

The nutrients in the vegetables are estimated by comparison of the amounts thus computed with the composition as given in the table of composition of vegetable foods.

The mixture of barley and rice is said to contain about equal parts of both, the former costing about six, and the latter eight, cents per pound.

DIETARY NUMBER, B 4.

Description: Boarding-house, Holyoke, Mass. French Canadian. Eighteen persons, 3 children and 15 adults (8 men and 7 women). Operatives in paper mills. The wages of the men are about \$1.25 per day, and of the women, 90 cents. The price of board per week is \$2.75 for men and \$2.00 for women. Time, one month. Estimated as equivalent in demands for nutrients to 15 $\frac{1}{2}$ men for 30 days, or 1 man for 465 days.

ANALYSIS.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohy- drates.
	cents.	lbs.		lbs.	lbs.	lbs.
Beef,	-	200	\$45 00	25.8	84.2	-
Veal,	-	20		3.0	1.1	-
Mutton,	-	20		2.8	4.7	-
Pork, fresh,	-	60		6.8	21.7	-
Salt pork,	9	100	9 00	2.8	76.5	-
Lard,	10	40	4 00	-	39.6	-
Total meats, etc.,		440	\$58 00	41.2	227.8	-

DIETARY NUMBER, B 4 — Concluded.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohy- drates
	cents.	lbs.		lbs.	lbs.	lbs.
Eggs (50 doz. at 18 cts.), . . .	13 1-12	68.8	\$9 00	8.0	7.0	0.4
Milk (136 qts.),	3 1/4	272	9 00	9.2	10.1	13.1
Butter,	27	30	8 10	0.3	20.3	0.2
Total dairy products and eggs,		370.8	\$26 10	17.5	43.4	13.7
Flour,	5	120	\$6 00	13.3	1.3	90.5
Beans (8 qts. at 7 1/2 cts.), . . .	4	15	60	3.5	0.3	8.1
Pease (5 qts. at 8 cts.),	4 1/4	9.4	40	2.2	0.1	4.9
Rice,	—	16.1 }	1 40	1.2	0.1	12.8
Barley,	—	6.9 }	—	0.6	0.1	5.4
Potatoes,	1 1/2	420	6 00	8.0	0.8	77.3
Vegetables,	—	504	8 01	8.3	1.2	31.4
Corn starch,	10	4	40	—	—	3.3
Sugar,	7 1/2	60	4 50	—	—	58.0
Syrup and molasses,	1 1/2	40.2	2 00	—	—	28.5
Total vegetable food,		1,285.6	\$29 31	37.1	3.9	320.2
Total animal food,		810.8	84 10	58.7	271.2	13.7
Total food,		2,096.4	\$113 41	95.8	275.1	333.9
Meats, etc., per man per day, . .		.95	\$0 12	.09	.49	—
Dairy products and eggs, per man per day, . . . . .		.80	06	.04	.09	.03
Animal food, per man per day, . .		1.75	\$0 18	.13	.58	.03
Vegetable food, “ “		2.76	06	.08	.01	.69
Total food, “ “		4.51	\$0 24	.21	.59	.72

The meat is said to consist of 300 pounds of fresh meat, costing \$45.00, and 100 pounds of salt pork, costing \$9.00. In an explanatory note the meat is estimated to consist usually of beef, 50 per cent; veal, 5 per cent; mutton, 5 per cent; and pork, 40 per cent, of which about two-thirds is fresh. This would make the total amount of salt pork equal 13 1/3 per cent, whereas in the figures of the dietary it is said to make 100 pounds of the whole 400 pounds of meat, or just 25 per cent. Assuming, however, that the word fresh in the note was a slip of the pen, for salt, there would be 26 2/3 per cent of salt pork, which coincides with the figures of the dietary. In the calculations it is assumed that only one-third of the pork is fresh.

The quantity of vegetables is not stated in the dietary. The cost is given at \$8.00. The cabbages are estimated to make 60 per cent; onions, 20 per cent; turnips, 15 per cent; and carrots, 5 per cent of the amount. Assuming the cost of the cab-

bage to be $1\frac{1}{4}$ cents, of the onions 2 cents, and of the turnips and carrots 1 cent each per pound, \$8.00 would buy the following quantities of vegetables :

VEGETABLES.	Per cent.	Quantity.	Price per lb.	Cost.
		lbs.	cts.	
Cabbages,	60	356	$1\frac{1}{4}$	\$4 45
Onions,	20	119	2	2 37
Turnips,	15	89	1	89
Carrots,	5	30	1	30
Totals,	100	594	-	\$8 01

The quantities of nutrients ascribed to vegetables in the dietary are those estimated to occur in the above named quantities of cabbages, onions, turnips, and carrots.

The mixture of rice and barley is stated to contain about 70 per cent of rice and 30 per cent of barley.

DIETARY NUMBER, B 5.

Description: Boarding-house, Holyoke, Mass. French Canadians. Ten persons, 6 males and 4 females, from 16 to 40 years of age. Factory operatives. Time, one month. Wages, males, \$1.25 to \$1.50 per day; females, 90 cents to \$1.00. Estimated as equivalent to $9\frac{1}{2}$ men for 30 days, or 1 man for 280 days.

ANALYSIS.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohydrates.
	cents.	lbs.		lbs.	lbs.	lbs.
Beef,	-	42	\$27 40	5.2	12.9	-
Veal,	-	5		0.8	0.3	-
Mutton,	-	5		0.7	1.2	-
Pork, fresh,	-	119	3 75	13.5	43.0	-
Pork, salt,	10	37.5		1.1	28.7	-
Lard,	10	40		-	40.0	-
Fish (salt mackerel),	10	46	4 50	6.6	6.8	-
Total meats, fish, etc.,		293.5	\$39 65	27.9	132.9	-
Eggs (33 doz. at 18.2 cts.),	13 $\frac{1}{2}$	45	\$6 00	5.2	4.6	0.3
Milk (20 qts. at 7 $\frac{1}{2}$ cts.),	3 $\frac{1}{4}$	40	1 50	1.4	1.5	1.9
Butter (26 lbs.),	27	26	7 00	0.3	22.8	0.1
Total dairy products and eggs,		111	\$14 50	6.9	28.9	2.3
Flour,	4	300	\$12 00	33.3	3.3	226.2
Barley,	-	0.4	30	-	-	0.3
Rice,	-	3.6		0.3	-	2.9
Beans (7 qts. at 8 $\frac{1}{2}$ cts.),	4 $\frac{3}{4}$	13		3.0	0.3	7.0
Pease (9 qts. at 8 cts.),	4 $\frac{1}{4}$	17	5 72	3.9	0.3	8.9
Potatoes (6 $\frac{1}{2}$ bush. at 88 cts.),	-	390	5 72	7.4	0.8	71.8
Vegetables,	-	465	6 00	7.3	0.8	22.2
Total vegetable food,		1,189	\$25 34	55.2	5.5	339.3
Total animal food,		404.5	54 15	34.8	161.8	2.3
Total food,		1,593.5	\$79 49	90.0	167.3	341.6

DIETARY NUMBER, B 5 — Concluded.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohy- drates.
Meats, fish, etc., per man per day,	cents.	lbs.		lbs.	lbs.	lbs.
Dairy products and eggs, per man per day,39	\$0 14	.10	.47	-
Animal food, per man per day,	1.44	\$0 19	.12	.57	.01
Vegetable food, " " " "	4.25	09	.19	.02	1.21
Total food, " " " "	5.69	\$0 28	.31	.59	1.22

The meat was said to include 208½ pounds, costing \$31.15, of which 37½ pounds were salt pork, costing \$3.75, and 171 pounds fresh meat, costing \$27.40. The whole meat was estimated to consist of beef, about 20 per cent; mutton and veal in equal parts, 5 per cent; and pork, fresh and salt, 75 per cent. The vegetables are reported to have been about 80 per cent of cabbage; 10 per cent, onions; and the rest turnips and carrots in nearly equal amounts. The amounts and composition of the vegetables are calculated as in the preceding dietaries, B 1 and B 4.

DIETARY NUMBER, B 6.

Description: French Canadian family in Holyoke, Mass., consisting of 6 persons, father, mother, and four children, aged 9, 12½, 17, and 24, of which the last two are counted as adults, making 4 adults and 2 children in the family. The two oldest children, one male and one female, are mill operatives, and earn respectively \$1.35 and 90 cents per day. The father works occasionally, and earns \$1.25 per day. Time, one month. Estimated as equivalent in demands for nutrients to 5 laboring men for 30 days, or 1 man for 150 days.

ANALYSIS.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohy- drates.
	cents.	lbs.		lbs.	lbs.	lbs.
Beef,	-	25.2	\$9 45	3.4	6.3	-
Pork, fresh,	-	15.7		1.9	5.7	-
Mutton,	-	3.2		0.4	0.8	-
Veal,	-	3.2		0.5	0.2	-
Salt pork,	-	15.7		0.5	12.0	-
Lard,	9	6.5	59	-	6.4	-
Total meats, etc., . . . . .	. . .	69.5	\$10 04	6.7	31.4	-
Eggs (13½ doz.),	10½	25.3	\$2 70	2.9	2.6	0.2
Butter,	25	7	1 75	0.1	6.1	-
Total dairy products and eggs, . . . . .	. . .	32.3	\$4 45	3.0	8.7	0.2

DIETARY NUMBER, B 6 — Concluded.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohydrates.
	cents.	lbs.		lbs.	lbs.	lbs.
Flour,	4	37	\$1 50	4.1	0.4	27.9
Rice,	—	1.7 }		0.1	—	1.3
Barley,	—	1.8 }	28	0.2	—	1.4
Potatoes (1¼ bush.),	1¼	75	1 10	1.4	0.2	13.8
Vegetables,	—	52.8	65	0.6	0.1	2.9
Corn starch,	11	2	22	—	—	1.7
Sugar,	8	21.5	1 72	—	—	20.8
Molasses and syrup,	—	34.5	1 53	—	—	24.5
Bread (63 two-pound loaves),	2¼	126	3 15	11.2	2.4	69.9
Total vegetable food,		352.3	\$10 20	17.6	3.1	164.2
Total animal food,		101.8	14 49	9.7	40.1	0.2
Total food,		454.1	\$24 69	27.3	43.2	164.4
Meats, etc., per man per day, . . . . .		.46	\$0 07	.04	.21	—
Dairy products and eggs, per man per day, . . . . .		.21	03	.02	.06	—
Animal food, per man per day, . . . . .		.67	\$0 10	.06	.27	—
Vegetable food, “ “		2.35	07	.12	.02	1.09
Total food, “ “		3.02	\$0 17	.18	.29	1.09

The meat is reported at 63 pounds, costing \$9.45, and said to be about 40 per cent of beef; 5 per cent, mutton; 5 per cent, veal; 25 per cent, fresh pork; and 25 per cent, salt pork. The beef was said to be mostly brisket and shoulder.

The vegetables are reported to have cost 65 cents and to consist of about 50 per cent of cabbage; 20 per cent, turnips; 5 per cent, onions; 5 per cent, carrots; the remainder being “sundries, and varying according to the season.” For the latter the composition of onions, which is about the average of all, is assumed.

The report includes 3½ pounds of rice, costing 28 cents, but a note appended implies that this is the mixture of rice and barley commonly used by Canadians and consisting, in this case, of one-half rice and one-half barley.

The amounts of vegetables are computed as below :

VEGETABLES.	Per cent.	Quantity.	Price per lb.	Cost.
		lbs.	cts.	
Cabbages,	50	26.4	1¼	\$0 33
Turnips,	20	10.6	1	11
Onions,	5	2.6	2	5
Carrots,	5	2.6	1	3
Remainder,	20	10.6	1¼	13
Totals,	100	52.8	—	\$0 65

amounts would be the following, which are assumed for the estimates.

KIND OF MEAT.	Per cent.	Quantity.
Beef,	50	lbs. 57.7
Mutton,	10	11.5
Fresh pork,	25	23.8
Totals,	85	93.0

The vegetables are said to cost 90 cents and to consist of about 55 per cent of cabbage; 20 per cent, onions; 10 per cent, turnips; and 5 per cent, carrots, the remainder varying according to the season. The following are estimated amounts. The nutrients are computed as in previous cases.

VEGETABLES.	Per cent.	Quantity.	Price per lb.	Cost.
Cabbages,	55	lbs. 35.1	cts. 1¼	\$0 45
Onions,	20	13.1	2	26
Turnips,	10	6.6	1	07
Carrots,	5	3.3	1	03
Remainder,	10	6.6	1¼	09
Totals,	100	65.7	—	\$0 90

DIETARY NUMBER, B 12.

Description: French Canadian family in Worcester, Mass., consisting of father, mother, and two children, girls of 3 and 5 years, respectively. The father is a printer, and earns \$2.00 per day. Time, one month. The demands of the family for nutrients are taken as equivalent to 2.3 men for 30 days, or 1 man for 84 days.

ANALYSIS.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohydrates.
	cents.	lbs.		lbs.	lbs.	lbs.
Beef,	—	24.8	\$10 00	3.3	6.2	—
Beef steak,	—	24.7		3.0	9.1	—
Mutton,	—	3.3		0.5	0.8	—
Pork, fresh,	—	6.6		0.8	2.4	—
Salt pork,	—	6.6	50	0.2	5.0	—
Lard,	10	5		—	5.0	—
Total meats, etc.,		71.0	\$10 50	7.8	28.5	—
Eggs (9 doz. at 19¼ cts.),	14	12.4	\$1 75	1.5	1.3	0.1
Milk (32 qts. at 6¼ cts.),	3¼	64	2 00	2.2	2.4	3.1
Total dairy products and eggs,		76.4	\$3 75	3.7	3.7	3.2

DIETARY NUMBER, B 12—Concluded.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohydrates.
	cents.	lbs.		lbs.	lbs.	lbs.
Flour,	5	52.0	2 60	5.8	0.6	39.2
Beans (5 qts. at 8 cts.), . . .	4½	9.4	40	2.3	0.2	5.0
Pease (2 qts. at 7½ cts.), . . .	2½	1 9	15	0.4	—	1.0
Rice,	—	4.5 }	40	0.3	—	3.6
Barley,	—	1.5 }	40	0.1	—	1.2
Potatoes (1¼ bush.),	2½	75	1 00	1.4	0.2	13.8
Vegetables,	—	36	50	0.4	—	1.9
Apples (1½ bush.),	12½	30	50	0.1	—	3.3
Corn starch,	10	2	20	—	—	1.7
Sugar,	8	15	1 20	—	—	14.5
Molasses and syrup (½ gal.), . .	3½	5.8	20	—	—	4.1
Raisins and currants,	15	2	30	0.1	—	1.3
Total vegetable food,		235.1	\$7 45	10.9	1.0	90.6
Total animal food,		147.4	14 25	11.5	32.2	3.2
Total food,		382.5	\$21 70	22 4	33.2	93.8
Meats, etc., per man per day, . .		.85	\$0 12	.09	.34	—
Dairy products and eggs, per man per day, . . . . .		.91	04	.04	.04	.04
Animal food, per man per day, . .		1.76	\$0 16	.13	.38	.04
Vegetable food, “ “		2.80	09	.13	.01	1.08
Total food, “ “		4.56	\$0 25	.26	.39	1.12

The meat, stated at 66 pounds, costing \$10.00, is said in an explanatory note to consist of about 75 per cent of beef, of which one-half might be rump steak; mutton, 5 per cent; and pork, 20 per cent, one-half of the latter being salt and one-half fresh. The vegetables, stated to cost 50 cents, are estimated to consist of cabbage, 20 per cent; onions, 20 per cent; turnips, 15 per cent; the remainder varying with the season. Vegetables in the quantities and at the prices named would cost 50 cents. These quantities are assumed and the nutrients are estimated as in previous cases.

VEGETABLES.	Per cent.	Quantity.	Price per lb.	Cost.
		lbs.	cts.	
Cabbages,	20	7½	1¼	\$0 10
Onions,	20	7½	2	15
Turnips,	15	5	1	05
Remainder,	45	16	1¼	20
Totals,	100	36	—	\$0 50

The mixture of rice and barley, 6 pounds costing 40 cents, is estimated to consist of three-fourths rice and one-fourth barley.

DIETARY NUMBER, B 13.

Description: French Canadian family in Worcester, Mass., consisting of father, mother, and 8 children. Of the latter, 4 are adults, aged 16, 18½, 20, and 25 years, the oldest being a female, and are all mill operatives. The 4 younger children are aged 4, 7, 9, and 13 years. Time, one month. The family are estimated as equivalent in demands for nutrients to 8 men for 30 days, or 1 man for 240 days.

ANALYSIS.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohydrates.
	cents.	lbs.		lbs.	lbs.	lbs.
Beef,	-	60 }		7.1	17.9	-
Mutton,	-	24 }		3.3	5.6	-
Veal,	-	12 }	\$18 09	1.8	0.7	-
Pork, fresh,	-	6 }		0.7	2.2	-
Pork, salt,	-	18 }		0.5	13.8	-
Lard,	10	4	40	-	4.0	-
Total meats, etc.,		124	\$18 49	13.4	44.2	-
Eggs (12 doz.),	14½	16.5	\$2 40	1.9	1.7	0.1
Butter,	25	10	2 50	0.1	8.8	0.1
Milk,	3½	136	4 50	4.6	5.0	6.5
Total dairy products and eggs,		162.5	\$9 40	6.6	15.5	6.7
Flour,	5	56	\$2 80	6.2	0.6	42.2
Rice,	-	5.2 }		0.4	-	4.1
Barley,	-	1.8 }	48	0.2	-	1.4
Pease (2 qts. at 8 cts.),	4¼	3.8	16	0.9	0.1	2.0
Potatoes (3½ bush.),	-	210	3 00	4.0	0.4	33.6
Vegetables,	-	74.9	1 24	0.8	0.1	4.8
Corn starch,	10	0.5	05	-	-	0.4
Bread (150 two-pound loaves),	2½	300	7 50	26.7	5.7	166.5
Total vegetable food,		652.2	\$15 23	39.2	6.9	260.0
Total animal food,		286.5	27 89	20.0	59.7	6.7
Total food,		938.7	\$43 12	59.2	66.6	266.7
Meats, etc., per man per day, . . . . .		.52	\$0 08	.06	.18	-
Dairy products and eggs, per man per day, . . . . .		.63	04	.03	.07	.03
Animal food, per man per day,		1.20	\$0 12	.09	.25	.03
Vegetable food, " "		2.72	06	.16	.03	1.08
Total food, " "		3.92	\$0 18	.25	.28	1.11

Of the meat about 50 per cent was beef, usually plate and ribs; 20 per cent, mutton; 10 per cent, veal; and 20 per cent, pork, of which three-fourths was salt.

The figures in the dietary include onions, 3 quarts, costing 24 cents, and other vegetables costing one dollar.

Assuming the remainder to have composition corresponding to onions, which approximates the mean of the whole, and the cost of cabbages, turnips, and carrots to average $1\frac{3}{7}$ cents per pound, the \$1.00 would have bought 70 pounds, of which cabbage would have made 20, turnips 15, carrots 10, and the

remainder 25 pounds. The quantities of vegetables would be, therefore, as follows, the quantities being assumed and the nutrients estimated as in previous cases :

VEGETABLES.	Per cent.	Quantity.	Price per lb.	Cost.
Onions,	7	lbs. 4.9	cts. 5	\$0 24
Cabbages,	27	20	} 13-7	1 00
Turnips,	20	15		
Carrots,	13	10		
Remainder,	33	25		
Totals,	100	74.9	-	\$1 24

Series C. French Canadian, Canada.

The five dietaries of this series which are used in the analyses tables include one of a boarding-house and four of families in Quebec, St. John, Sherbrooke, Richmond, and Rivière du Loup. The averages include, with these, eight others of families and boarding-houses. All are laboring people. The following statements explain dietary habits of the people among whom the statistics were collected.

The meat, aside from salt pork, consists mainly of lamb, veal, and beef, the last being the chief item. The beef is very generally boiled with cabbage. Salt pork is eaten with pea soup. On Fridays the soup only is eaten, the meat being kept until Saturday.

The fish are mostly salt cod, though some salt herring from Labrador are used.

Eggs are estimated to weigh one and a half pounds to the dozen.

Bread, in the province of Quebec, is made by bakers, as a general rule, even in the country. The loaf of ordinary bread has a uniform weight of six pounds, regulated by municipal or provincial law.

Barley is used mainly for soup in a form practically the same as that known in New England and elsewhere as pearly barley.

The vegetables consist ordinarily of cabbage, onions, and carrots. The weight of the cabbages will average six pounds and the price 4 cents per head, making the average price about $\frac{2}{3}$ cents per pound. The onions average \$1.20 per bushel of

52 pounds, or $2\frac{1}{3}$ cents per pound.* The carrots usually cost about 40 cents per bushel of 60 pounds, or $\frac{2}{3}$ cents per pound. The three are commonly used in about the proportions by weight of cabbages, 3 pounds; onions, 2 pounds; and carrots, 1 pound.

On the basis of the above data the following estimates have been made:

Meats. For the meat other than salt pork we have assumed for the relative proportions, by weight: Beef, 3; mutton, 1; veal, 1. For the composition of the meat we have considered the fact that the specimens of Chicago beef taken as the basis for computing the composition of beef in the Massachusetts dietaries were fatter than the average of those analyzed in Europe (of which the most are French and German), and presuming that the Canadian beef might approach more nearly to the European averages we have assumed figures for composition approaching nearer to the European standards.

Taking for "moderately fat beef" (flesh free from bone), as its composition: water, 65 per cent; protein, 19 per cent; fats, 14.9 per cent, and mineral matters, 1.1 per cent, and allowing 20 per cent for refuse, bone, etc., we have for beef as purchased, protein 15.2 per cent and fat 11.9 per cent. Taking still further the figures for mutton and veal given in the table on page 261, and allowing the Canadian meat to consist of three parts by weight of beef and one each of mutton and veal, the percentages of nutrients would by a simple computation be protein 14.9, and fats 13.

Vegetables. In estimating the composition of vegetables the data are still less definite. Assuming the vegetables to consist of cabbages, onions, and carrots in the proportions by weight of 3:2:1; to cost respectively $\frac{2}{3}$ cents, 2 cents, and $\frac{2}{3}$ cents per pound, and to have the composition stated in the

* In estimating the composition of vegetables, the cost of onions has been assumed to be, roughly, 2 cents per pound. •

table on pages 261 and 262 one dollar would pay for the following quantities :

VEGETABLES.	Quantities.	Costs.	Protein.	Fats.	Carbohy- drates.
	lbs.	cents.	lbs.	lbs.	lbs.
Cabbages,	45	30	0.76	0.09	1.93
Onions,	30	60	0.50	0.06	2.25
Carrots,	15	10	0.14	0.03	1.14
Total, for one dollar, . .	90	100	1.20	0.18	5.37

We have accordingly assumed that one dollar would purchase 90 pounds of vegetables, containing 1.2 pounds of protein; 0.2 pounds of fats, and 5.4 pounds of carbohydrates. As the original reports of the dietaries give only the costs of the vegetables, and not the quantities of vegetables and of nutrients in them, we have computed them on this basis. It should be remembered, however, that the quantities of vegetables consumed are small, so that if these estimates vary from the truth the effect upon the general result will be very slight.

As to meats the figures assumed for composition are not far from the mean of meats in common use, and the variations from the truth, wide as they may be, could hardly affect the composition of the dietaries as a whole so materially as to throw great doubt upon the general conclusions derived from comparing them with the dietaries of series A and B.

The figures just explained as taken for estimates of the dietaries of series C are, briefly recapitulated, the following :

FOOD-MATERIALS.	Protein.	Fats.	Carbohydrates.
	Per cent.	Per cent.	Per cent.
"Meat,"	14.9	13.0	-
Salt pork,	11.5*	29.9*	-
	lbs.	lbs.	lbs.
Vegetables, for one dollar,	1.2	0.2	5.4

* Taken from European analyses.

DIETARY NUMBER, C 1.

Description: Board of 8 adults, working people in Montreal, for one month. Assuming 4 to be males, and 4 to be females, and taking the latter as equal to 3 laboring men, the whole would be equivalent in demands for nutrients to 7 men for 30 days, or 1 man for 210 days.

ANALYSIS.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohydrates.
	cents.	lbs.		lbs.	lbs.	lbs.
Meat, fresh,	-	75 }	\$10 00	11.2	9.8	-
Salt pork,	-	25 }		2.9	7.5	-
Lard,	13	10	1 30	-	9.9	-
Total meats, etc.,		110	\$11 30	14.1	27.2	-
Eggs (4 doz. at 15 cts.), . .	10	6	\$0 60	0.7	0.6	-
Milk (10 qts. at 5 cts.), . .	2½	20	50	0.7	0.7	1.0
Cheese,	10	4	40	1.1	1.4	0.1
Total dairy products and eggs,		30	\$1 50	2.5	2.7	1.1
Flour,	3	28	\$0 84	3.1	0.3	21.1
Pease,	4	4	16	0.9	0.1	2.1
Beans,	7	1	07	0.2	-	0.5
Barley,	6	5	30	0.4	-	3.9
Rice,	4	3	12	0.2	-	2.4
Potatoes,	2½	120	80	2.3	0.2	22.1
Vegetables,	-	90	1 00	1.2	0.2	5.4
Sugar,	6	54	3 24	-	-	52.2
Syrup and molasses (2 gals.), .	4	23	90	-	-	16.3
Bread (40 six-pound loaves), .	2½	240	6 40	21.4	4.6	133.2
Crackers,	10	5.5	55	0.6	0.5	3.8
Total vegetable food,		573.5	\$14 38	30.3	5.9	263.0
Total animal food,		140	12 80	16.6	29.9	1.1
Total food,		713.5	\$27 18	46.9	35.8	264.1
Meats, etc., per man per day, .		.52	\$0 05	.07	.13	-
Dairy products and eggs, per man per day, . . . . .		.14	01	.01	.01	.01
Animal food, per man per day, .		.66	\$0 06	.08	.14	.01
Vegetable food, " " " " " "		2.73	07	.14	.03	1.25
Total food, " " " " " "		3.39	\$0 13	.22	.17	1.26

DIETARY NUMBER, C 5.

Description: Family in Montreal, consisting of father, mother, and one child, 3 years old. Time, one month. Assuming the mother to require 0.8, and the child 0.5, as much nutrient as a laboring man, the requirements of the 3 persons may be taken as equivalent in demands for nutrients to 2½ laboring men for 30 days, or 1 man for 70 days.

ANALYSIS.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohydrates.
	cents.	lbs.		lbs.	lbs.	lbs.
Meat,	-	11.5 }	\$2 30	1.7	1.5	-
Salt pork,	-	11.5 }		1.3	3.4	-
Lard,	13½	3	40	-	2.9	-
Salt cod,	4	8	32	1.3	-	-
Total meats, fish, etc.,		34	\$3 02	4.3	7.8	-

DIETARY NUMBER, C 5 — Concluded.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohydrates.
	cents.	lbs.		lbs.	lbs.	lbs.
Eggs (8 doz., at 15 cts.), . . .	10	12	\$1 20	1.4	1.2	0.1
Butter,	19	17	3 25	0.2	14.8	0.1
Milk (12 qts.),	2½	24	60	0.8	0.9	1.2
Total dairy products and eggs,		53	\$5 05	2.4	16.9	1.4
Flour,	3	16.7	\$0 50	1.9	0.2	12.6
Rice,	4	5	20	0.4	—	4.0
Pease,	4	3	12	0.7	0.1	1.8
Beans,	7	1	07	0.3	—	0.5
Potatoes,	3½	60	40	1.1	0.1	11.0
Vegetables,	1 19	36	40	—	—	2.2
Corn starch,	10	1	10	—	—	0.8
Sugar,	6	7	42	—	—	6.8
Syrup and molasses (1½ gal.), .	3½	5.8	45	—	—	4.1
Bread (20 six-pound loaves), .	2½	120	3 20	10.7	2.3	66.6
Total vegetable food,		255.5	\$5 86	15.1	2.7	110.2
Total animal food,		87	8 07	6.7	24.7	1.4
Total food,		342.5	\$13 93	21.8	27.4	111.6
Meats, fish, etc., per man per day, . . . . .		.49	\$0 04	.06	.11	—
Dairy products and eggs, per man per day, . . . . .		.75	07	.03	.24	.02
Animal food, per man per day,		1.24	\$0 11	.09	.35	.02
Vegetable food, " "		3.65	08	.22	.04	1.57
Total food, " "		4.89	\$0 19	.31	.39	1.59

DIETARY NUMBER, C 6.

Description: Family in Quebec, consisting of father, mother, and six children, from 1 to 12 years of age. Time, one month. Assuming one child to be under 2 years, and to require ½ as much food as a laboring man, two children to be between 3 and 6 years, and to need each ½ as much as a man, and three to be between 6 and 12 years, and to require each 0.7 as much as a man, and allowing for the mother 0.8 the same amount, the family would be equivalent to 5.15, or, in round numbers, 5 men for 30 days, or 1 man for 150 days. This is one of the cases in which this method of computation is particularly unsatisfactory.

ANALYSIS.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohydrates.
	cents.	lbs.		lbs.	lbs.	lbs.
Meats,	—	52.5 }	\$7 00	7.8	6.8	—
Salt pork,	—	17.5 }		2.0	5.2	—
Salt cod,	4	15 }		2.4	0.1	—
Total meats and fish,		85	\$7 60	12.2	12.1	—
Eggs (8 doz. at 15 cts.), . . .	10	12	\$1 20	1.4	1.2	0.1
Butter,	18	15	2 70	0.2	13.1	0.1
Milk (60 qts. at 5 cts.), . . .	2½	120	3 00	4.1	4.4	5.8
Total dairy products and eggs,		147	\$6 90	5.7	18.7	6.0

DIETARY NUMBER, C 6—Concluded.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohydrates.
	cents.	lbs.		lbs.	lbs.	lbs.
Flour,	3	48	\$1 44	5.3	0.5	36.2
Rice,	4	8	32	0.6	—	6.3
Barley,	6	7	42	0.6	0.1	5.4
Pease (1½ bush.),	2½	15	35	3.4	0.2	7.9
Beans (4 qts. at 8 cts.),	4½	7.5	32	1.7	0.2	4.0
Potatoes (2 bush. at 40 cts.),	2½	120	80	2.3	0.2	22.1
Vegetables,	—	—	70	0.8	0.1	3 8
Sugar,	7	12	84	—	—	11.6
Bread (20 loaves),	2½	120	3 20	10.7	2.3	66.6
Total vegetable food,		337.5	\$8 39	25.4	3.6	163.9
Total animal food,		232	14 50	17.9	30.8	6.0
Total food,		569.5	\$22 89	43.3	34.4	169.9
Meats and fish, per man per day, . . . . .		.57	\$0 05	.08	.08	—
Dairy products and eggs, per man per day, . . . . .		.08	05	.04	.12	.04
Animal food, per man per day,		1.55	\$0 10	.12	.20	.04
Vegetable food, “ “		2.25	06	.17	.02	1.09
Total food, “ “		3.80	\$0 16	.29	.22	1.13

DIETARY NUMBER, C 9.

Description: Family in Quebec, consisting of father, mother, and six children, from 2 to 14 years of age. Time, one month. Assuming two of the children to have been between 2 and 6, and four between 6 and 15 years of age, the whole family would, by the method of estimating here followed, be equivalent in demands for nutrients to 5.1 men. Taking the whole family as equivalent to 5 men, their demand for 30 days would be equal to that of 1 man for 150 days.

ANALYSIS.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohydrates.
	cents.	lbs.		lbs.	lbs.	lbs.
Meat,	—	40 }	\$8 00	6.0	5.2	—
Salt pork,	—	40 }		4.6	12.0	—
Salt cod,	4	20	80	3.2	0.1	—
Total meats and fish,		100	\$8 80	13.8	17.3	—
Eggs (1½ doz. at 16 cts.),	10½	2.3	\$0 24	0.3	0.2	—
Milk (8 qts. at 5 cts.),	2½	16	40	0.5	0.6	0.8
Butter,	18	20	3 60	0.2	17.5	0.1
Total dairy products and eggs,		38.3	\$4 24	1.0	18.3	0.9
Flour,	3	30	\$0 90	3.0	0.3	22.6
Rice,	4	4	16	0.3	—	3.2
Barley,	6	4	24	0.3	—	3.1
Pease (4 qts.),	2½	7.5	20	1.7	0.1	3.9
Potatoes (2 bush. at 35 cts.),	2½	120	70	2.3	0.2	22.1
Vegetables,	—	—	40	0.5	0.1	2.2
Sugar,	6	20	1 20	—	—	19.3
Bread (40 loaves),	2½	240	6 40	21.4	4.6	133.2
Total vegetable food,		425.5	\$10 20	29.5	5.3	209.6
Total animal food,		138.3	13 04	14.8	35.6	0.9
Total food,		563.8	\$23 24	44.3	40.9	210.5

DIETARY NUMBER, C 9 — Concluded.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohy- drates.
Meats and fish, per man per day,	cents.	lbs.		lbs.	lbs.	lbs.
Dairy products and eggs, per man per day,07	\$0 06	.09	.12	-
Animal food, per man per day, Vegetable food, " "26	03	.01	.12	.01
93	\$0 09	.10	.24	.01
	. . .	2.84	0 07	.20	.04	1.40
Total food, " "	3.77	\$0 16	.30	.28	1.41

DIETARY NUMBER, C 11.

Description: Family in St. John, consisting of father, mother, and three children from 2 to 7 years of age. Time, one month. Assuming one child to be between 6 and 15, and two to be between 2 and 6 years of age, the whole family would, by the method of estimating here followed, be equivalent in demands for nutrients to 3.5 men for 30 days, or to 1 man for 105 days.

ANALYSIS.

FOOD-MATERIALS.				NUTRIENTS		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohy- drates.
	cents.	lbs.		lbs.	lbs.	lbs.
Meat,	-	30 }	\$4 00	4.5	3.9	-
Salt pork,	-	10 }		1.2	3.0	-
Lard,	15	5		-	4.9	-
Salt cod,	4	10		0.2	0.1	-
Total meats, fish, etc., . . . . .	. . .	55	\$5 15	5.9	11.9	-
Eggs (8 doz.),	10	12	\$1 20	1.3	0.1	0.1
Butter,	13	10	1 80	0.1	8.8	0.1
Milk,	2½	72	1 80	2.3	2.7	3.5
Total dairy products and eggs, . . . . .	. . .	94	\$4 80	3.7	11.6	3.7
Flour,	3	33	\$1 00	3.7	0.4	24.9
Rice,	4	6	24	0.4	-	4.8
Pease,	4	7	28	1.6	0.1	3.7
Beans,	7	2	14	0.5	-	1.1
Potatoes,	½	60	35	1.1	0.1	11.0
Vegetables,	1 1-9	27	30	0.4	0.1	1.6
Sugar,	6	12	72	-	-	11.6
Syrup and molasses (1 gal.),	3½	11.5	40	-	-	8.2
Bread,	2½	114	3 04	10.1	2.2	63.3
Total vegetable food, . . . . .	. . .	272.5	\$6 47	17.8	2.9	130.2
Total animal food, . . . . .	. . .	149	9 95	9.6	23.5	3.7
Total food, . . . . .	. . .	421.5	\$16 42	27.4	26.4	133.9
Meats, fish, etc., per man per day, . . . . .	. . .	.52	\$0 03	.06	.11	-
Dairy products and eggs, per man per day, . . . . .	. . .	.90	05	.04	.11	.01
Animal food, per man per day, Vegetable food, " " . . . . .	. . .	1.42	\$0 10	.10	.22	.04
	. . .	2.59	06	.17	.03	1.24
Total food, " " . . . . .	. . .	4.01	\$0 16	.27	.25	1.28

299

Description: Family in St. John, consisting of father, mother, and eight children from 2 to 13 years of age. Time, one month. Assuming five of the children to have been between 6 and 12, and three between 2 and 6 years of age, the whole family would, by the method of estimating before explained, be equivalent in demands for nutrients to 6.8 men. Taking the demand at 6% men for 30 days, it would be equivalent to 1 man for 200 days.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohydrates.
	cents.	lbs.		lbs.	lbs.	lbs.
Meat,	-	22.5 }	\$4 50	3.4	2.9	-
Salt pork,	-	22.5 }		2.6	6.7	-
Lard,	13	4		-	4.0	-
Salt cod,	4	20		3.2	0.1	-
Total meats, fish, etc.,		69.0	\$5 82	9.2	13.7	-
Eggs (4 doz. at 16 cts.),	10 $\frac{3}{4}$	6	\$0 64	0.7	0.6	-
Milk (30 qts. at 5 cts.),	2 $\frac{1}{2}$	60	1 50	2.0	2.2	2.9
Butter,	18	22	4 00	0.2	19.3	0.1
Total dairy products and eggs,		88	\$6 14	2.9	22.1	3.0
Flour,	3	20	\$0 60	2.2	0.2	15.1
Rice,	4	7	28	0.5	-	5.5
Pease,	4	8	32	1.8	0.1	4.2
Beans,	7	1	07	0.2	-	0.5
Potatoes (2 bush.),	3.5	120	75	2.3	0.2	22.1
Vegetables,	11-9	22.5	25	0.3	-	1.4
Sugar,	6	17	1 00	-	-	16.4
Syrup and molasses (2 $\frac{1}{2}$ gals.),	3 $\frac{1}{2}$	23.3	1 00	-	-	20.4
Bread (30 loaves),	2 $\frac{2}{3}$	180	4 80	16.0	3.5	99.9
Total vegetable food,		404.3	\$9 07	23.3	4.0	185.5
Total animal food,		157	11 93	12.1	35.8	3.0
Total food,		561.3	\$21 03	35.4	39.8	188.5
Meats, fish, etc., per man per day,35	\$0 03	.05	.07	-
Dairy products and eggs, per man per day,44	03	.01	.11	.02
Animal food, per man per day,79	\$0 06	.06	.18	.02
Vegetable food, " "		2.02	05	.12	.02	.93
Total food, " "		2.81	\$0 11	.18	.20	.95

Description: Board of 10 adults in Sorel, for one month. Assuming five to have been females equivalent to four men, the whole would be equivalent in demands for nutrients to 9 men for 30 days, or 1 man for 270 days.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohy- drates.
	cents.	lbs.		lbs.	lbs.	lbs.
Meat, fresh,	-	47.5 }	\$9 50	7.1	6.2	-
Pork, salt,	-	47.5 }		5.5	14.1	-
Lard,	-	14	1 80	-	13.9	-
Total meats, etc., . . .		109.0	\$11 30	12.6	34.2	-

DIETARY NUMBER, C 13 — Concluded.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohydrates.
	cents.	lbs.		lbs.	lbs.	lbs.
Eggs (3 doz. at 15 cts.), . . .	10	4.5	\$0 45	5.2	0.5	-
Milk (15 qts. at 5 cts.), . . .	-	30	75	1.0	1.1	1.4
Cheese,	-	4	40	1.1	1.4	0.1
Total dairy products and eggs, . . . . .	. . .	38.5	\$1 60	7.3	3.0	1.5
Flour,	3	35	\$1 05	3.9	0.4	26.4
Pease,	4	5	20	1.1	0.1	2.6
Beans,	7	3	21	0.7	0.1	1.6
Barley,	6	7	42	0.6	-	5.4
Rice,	4	2	08	0.1	-	1.6
Potatoes (3 bush.),	2½	180	1 20	3.4	0.4	33.1
Vegetables,	-	-	1 50	1.8	0.3	8.1
Apples (1 bush.),	-	60	1 00	0.2	-	6.5
Corn starch,	10	1	10	-	-	0.8
Sugar,	6	35	2 10	-	-	33.8
Molasses and syrup (7 gals.), . .	-	80.5	3 15	-	-	57.2
Bread (36¼ six-pound loaves), . .	2½	217.5	5 80	19.4	4.1	120.7
Crackers,	10	5	50	0.5	0.5	3.4
Total vegetable food, . . . . .	. . .	631	\$17 31	31.7	5.9	301.2
Total animal food, . . . . .	. . .	147.5	12 99	19.9	37.2	1.5
Total food, . . . . .	. . .	778.5	\$30 21	51.6	43.1	302.7
Meats, etc., per man per day, . . .	. . .	.40	\$0 04	.05	.13	-
Dairy products and eggs, per man per day, . . . . .	. . .	.14	01	.03	.01	.01
Animal food, per man per day, . . .	. . .	.51	\$0 05	.08	.14	.01
Vegetable food, " " . . . . .	. . .	2.34	06	.12	.02	1.12
Total food, " " . . . . .	. . .	2.88	\$0 11	.20	.16	1.13

DIETARY NUMBER, C 14.

Description: Board of 12 adults in Sorel. Time, one month. Assuming six to have been females, their requirements for nutrients would, by the method of estimating here followed, have been equal to that of about 5 (4.3) men, making the whole equivalent to 11 men for 30 days, or 1 man for 330 days.

ANALYSIS.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohydrates.
	cents.	lbs.		lbs.	lbs.	lbs.
Meat, fresh,	-	47.5 }	\$9 50	7.1	6.2	-
Salt pork,	-	47.5 }		5.5	14.2	-
Lard,	13	6		-	6.0	-
Fish, salt cod,	5	30	1 50	4.8	0.1	-
Total meats, fish, etc., . . . . .	. . .	131	\$11 73	17.4	26.5	-
Eggs (11 doz., at 15 cts.),	10	16.5	\$1 65	1.9	1.7	0.1
Milk (20 qts., at 5 cts.),	-	40	1 00	1.4	1.5	1.9
Cheese,	10	9	90	2.4	3.2	0.2
Butter,	18	25	4 50	0.2	21.9	0.1
Total dairy products and eggs, . . . . .	. . .	90.5	\$8 05	5.9	28.3	2.3

DIETARY NUMBER, C 14—Concluded.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohydrates.
	cents.	lbs.		lbs.	lbs.	lbs.
Flour,	3	53.3	\$1 60	5.9	0.6	40.2
Pease,	4	10	40	2.3	0.2	5.2
Beans,	7	3	21	0.7	0.1	1.6
Barley,	6	5	30	0.4	—	3.9
Rice,	4	2	08	0.1	—	1.6
Potatoes, (2 bush.),	2½	120	80	2.3	0.2	22.1
Vegetables,	1 1-9	135	1 50	1.8	0.3	8.1
Apples (1½ bush.),	—	90	1 50	0.3	—	9.5
Corn starch,	10	2	20	—	—	1.7
Sugar,	6	23.5	1 40	—	—	22.7
Syrup and molasses (7 gals.),	—	80.5	3 00	—	—	57.2
Bread (50 six-pound loaves),	2½	300	8 00	26.7	5.7	166.5
Total vegetable food,		824.3	\$18 99	40.5	7.1	340.6
Total animal food,		221.5	19 83	23.3	54.8	2.3
Total food,		1,045.8	\$38 82	63.8	61.9	342.9
Meats, fish, etc., per man per day, . . . . .		.40	\$0 04	.05	.08	—
Dairy products and eggs, per man per day, . . . . .		.27	02	.02	.09	.01
Animal food, per man per day, . . . . .		.67	\$0 06	.07	.17	.01
Vegetable food, " "		2.50	06	.12	.02	1.03
Total food, " "		3.17	\$ 12	.19	.19	1.04

DIETARY NUMBER, C 18.

Description : Board of 15 adults, in Rivière du Loup. Time, one month. Assuming eight of the persons to have been men and seven, women, the latter would, on the basis of calculation here used, be equivalent in demands for nutrients to 5.6 men, and the whole to 13.6 men, or 13½ men for 30 days would be equivalent to 1 man for 405 days.

ANALYSIS.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohydrates.
	cents.	lbs.		lbs.	lbs.	lbs.
Meat, fresh,	10	125	\$12 50	18.6	16.3	—
Lard,	13	20	2 60	—	19.8	—
Total meats, etc.,		145	\$15 10	18.6	36.1	—
Eggs (4 doz. at 15 cts.),	10	6	\$0 60	0.7	0.6	—
Milk (16 qts.),	2½	32	80	1.1	1.2	1.5
Butter,	18	35	6 30	0.4	30.6	0.2
Cheese,	10	5	50	1.4	1.8	0.1
Total dairy products and eggs,		78	\$8 20	3.6	34.2	1.8
Flour,	3	35	\$1 05	3.9	0.4	26.4
Rice,	4	3	12	0.2	—	2.4
Barley,	6	4	24	0.3	—	3.1
Pease,	4	7	28	1.6	0.1	3.7
Beans,	7	2	14	0.5	—	1.2
Potatoes (3 bush., at 40 cts.),	2½	180	1 20	3.4	0.4	33.1
Vegetables,	—	—	1 00	1.2	0.2	5.4
Sugar,	6	69	3 60	—	—	53.0
Syrup and molasses (1 gal.),	4½	11.5	50	—	—	8.2

303

Description: Family in Sherbrooke, consisting of father, mother, and two children, one of 3 years and one of 6 months. Time, one month. The family are computed as equivalent in their demands for nutrients to $2\frac{1}{2}$ men for 30 days, or 1 man for 75 days.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohy- drates.
	cents.	lbs.		lbs.	lbs.	lbs.
Meat, fresh,	-	30 }		4.5	3.9	-
Salt pork,	-	30 }	\$6 00	3.5	9.0	-
Salt fish (cod),	-	25	1 00	2.8	0.1	-
Total meats and fish,		85	\$7 00	10.8	13.0	-
Eggs (2 doz. at 15 cts.),	10	3	\$0 30	0.3	0.3	-
Milk (12 qts.),	-	24	62	0.8	0.9	1.2
Cheese,	10	2	20	0.5	0.7	-
Butter,	18	12	2 16	0.1	10.5	0.1
Total dairy products and eggs,		41	\$3 28	1.7	12.4	1.3
Flour,	3	6	\$0 18	0.7	0.1	4.5
Pease,	4	4	16	0.9	0.1	2.1
Beans,	-	4	30	0.9	0.1	2.1
Barley,	6	3	18	0.3	-	2.3
Rice,	4	2	08	0.1	-	1.6
Potatoes (1 bush.),	2½	60	40	1.1	0.1	11.0
Vegetables,	-	-	30	0.4	0.1	1.8
Sugar,	4	8	48	-	-	7.7
Syrup and molasses (1½ gal.),	6	5.7	20	-	-	4.0
Bread (15 six-pound loaves),	2½	90	2 30	8 0	1.7	50.0
Total vegetable food,		182.7	\$4 68	12.4	2.2	87.1
Total animal food,		126	10 23	12.5	25.4	1.3
Total food,		308.7	\$14 96	24.9	27.6	88.4
Meats and fish, per man per day,		1.13	\$0 09	.14	.17	-
Dairy products and eggs, per man per day,55	04	.02	.17	.02
Animal food, per man per day, Vegetable food, " "		1.68 2.43	\$0 13 06	.16 .17	.34 .03	.02 1.16
Total food, " "		4.11	\$0 19	.33	.37	1.18

Description: Family in Richmond, consisting of father, mother, and six children from 2 to 13 years. Time, one month. Assuming two of the children to be between 2 and 6, and four between 6 and 15 years of age, and one of the adult children to be male and the other female, the whole family may be estimated as equivalent in demands for nutrients to 7½ men. These for 30 days would be equivalent to 1 man for 225 days. This is another case in which the lack of definite data makes the estimate somewhat unsatisfactory.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohy- drates.
	cents.	lbs.		lbs.	lbs.	lbs.
Meat,	-	31 }	\$6 20	3.6	9.3	-
Salt pork,	-	31 }		4.6	4.0	-
Lard,	13	8		-	7.9	-
Salt fish (cod),	4	25	1 00	4.0	0.1	-
Total meats, fish, etc.,		95	\$8 24	12.2	21.3	-

DIETARY NUMBER, C 25 — Concluded.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohy- drates.
	cents.	lbs.		lbs.	lbs.	lbs.
Eggs (6 doz. at 15 cts.), . . .	10	9	\$0 90	1.0	0.9	0.1
Butter,	18	20	3 60	0.2	17.5	0.1
Cheese,	10	3	30	0.8	1.1	0.1
Milk (24 qts. at 5 cts.) . . .	2½	48	1 20	1.6	1.8	2.3
Total dairy products and eggs, . . .		80	\$6 00	3.6	21.3	2.6
Flour,	3	13.3	\$0 40	1.5	0.2	10.0
Rice,	4	15	60	1.1	0.1	11.9
Pease,	4	6	24	1.4	0.1	3.1
Potatoes,	2½	180	1 25	3.4	0.4	33.1
Vegetables,	1 1-9	8.1	90	1.1	0.2	4.9
Sugar,	6	40	2 40	-	-	38.7
Syrup and molasses (3 gals.), . .	3½	34.5	1 26	-	-	24.5
Bread,	2½	195	5 20	17.4	3.7	108.2
Total vegetable food,		491.9	\$12 25	25.9	4.7	234.4
Total animal food,		175	14 24	15.8	42.6	2 6
Total food,		666 9	\$26 49	41.7	47.3	237.0
Meats, fish, etc., per man per day, . . .		.42	\$0 04	.05	.09	-
Dairy products and eggs, per man per day, . . . . .		.36	03	.02	.09	.01
Animal food, per man per day, . . .		.78	\$0 07	.07	.18	.01
Vegetable food, " " . . .		2.19	05	.12	.02	1.04
Total food, " " . . .		2.97	\$0 12	.19	.20	1.05

DIETARY NUMBER, C 26.

Description: Family in Richmond, consisting of father, mother, and three children aged respectively 9, 12, and 14 years. Time, one month. By the method of computation here followed, the whole family would be equivalent in demands for nutrients to about 4 (3.9) men for 30 days, or 1 man for 120 days.

ANALYSIS.

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohy- drates.
	cents.	lbs.		lbs.	lbs.	lbs.
Meat,	10	52	\$5 20	7.8	6.8	-
Lard,	13½	4.5	60	-	4.5	-
Salt cod,	4	18.8	75	3.0	0.1	-
Total meats, fish, etc.,		75.3	\$6 55	10.8	11 4	-
Eggs (4¼ doz. at 15 cts.), . . .	10	6 4	\$0 64	0.7	0 7	-
Butter,	18	11	2 00	0.1	9.6	0.1
Milk,	2½	36	90	1.2	1.3	1.7
Total dairy products and eggs, . . .		53.4	\$3 54	2.0	11.6	1.8
Flour,	3	16	\$0 48	1.8	0.2	12.0
Rice,	4	16	64	0.3	-	3.2
Pease,	4	5	20	1.1	0.1	2.6
Beans,	7	2	14	0.5	-	1.2
Potatoes,	2½	90	60	1.7	0.2	16.6
Vegetables,	1 1-9	72	80	1.0	0.2	4.3
Sugar,	6	18.7	1 12	-	-	18.1
Syrup and molasses (3 gals. at 40 cts.),	3½	34.5	1 20	-	-	24.5
Bread,	2½	96	2 56	8.5	1.8	53.3
Total vegetable food,		338.2	\$7 26	14.9	2.5	135 8
Total animal food,		128.7	10 09	12.8	23.0	1.8
Total food,		466.9	\$17 35	27.7	25.5	137.6

305

FOOD-MATERIALS.				NUTRIENTS.		
Kinds.	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohydrates.
Meats, fish, etc., per man per day,	cents.	lbs. .63	\$0 05	lbs. .09	lbs. .10	lbs. —
Dairy products and eggs, per man per day,45	.03	.02	.10	.02
Animal food, per man per day,	1.08	\$0 08	.11	.20	.02
Vegetable food, “ “	2.82	.07	.12	.02	1.13
Total food, “ “	3.90	\$0 15	.23	.22	1.15

Number of dietary.	PERSONS REPORTED.	CLASSIFICATION.					Total number of persons.	Esti- mated equiva- lent to laboring men.		
		Adults.		Children.						
		Males.	Females.	15 to 6 years.	6 to 2 years.	Under 2 years.				
	<i>Miscellaneous, Massachu- setts.</i>									
A 11	Father, mother, one other adult female, 3 children of 5, 11, and 12 years.	1	2	2	1	-	6	4½		
A 1	Boarding-house, 66 males and 11 females.	66	11	-	-	-	77	75		
A 7	Boarding-house, 20 males and 16 females.	20	16	-	-	-	36	33		
A 2	Boarding-house, 10 males and 60 females.	10	60	-	-	-	70	58		
A 9	Husband and wife.	1	1	-	-	-	2	1 4-5		
	<i>French Canadian, Mas- sachusetts.</i>									
B 6	Father, mother, 2 adult children,* and 2 chil- dren of 9 and 12½ years.	2	2	2	-	-	6	5		
B 4	Boarding-house, 8 men, 7 women, and 3 children.	8	7	3	-	-	18	15½		
B 1	Father, mother and 4 adult children, one fe- male.	4	2	-	-	-	6	5½		
B 5	Boarding-house, 6 males and 4 females, ages 16-19 years.	6	4	-	-	-	10	9½		
B 10	Two brothers and a sis- ter, adults.	2	1	-	-	-	3	3		
	<i>French Canadian, Can- ada.</i>									
C 18	Boarding-house, 15 adults.	8	7	-	-	-	15	13½		
C 12	Father, mother, and 8 children, 2 to 13 years old.	1	1	5	3	-	10	6¾		
C 26	Father, mother, and 3 children of 9, 12, and 14 years.	1	1	3	-	-	5	4		
C 24	Father, mother, and 2 children, 6 months and 5 years old.	1	1	-	1	1	4	2½		
C 6	Father, mother, and 6 children, 1 to 12 years old.	1	1	3	2	1	8	5		

* One male and one female.

STATEMENTS OF RESULTS.

The table on page 305 is sufficiently explained by its title and by the statements made on pages 266-268, *ante*. It is intended to show the data and results of the estimates of the number of average "laboring men at moderate work" who would be equivalent in requirements of nutritive material to the persons stated to be actually nourished by the food of

Recapitulation of Analyses of Dieteries. Persons,

Number of dietary.	PERSONS, EMPLOYMENTS, WAGES, ETC.								
	DIETARIES.	Adults.		Children.	OCCUPATIONS.	Wages per day.		Board per week.	
		Males.	Females.			Males.	Females.	Males.	Females.
A 11	Miscellaneous, Mass. Family, E. Cambridge.	1	2	3	Father, glass-blower, work exhausting.	\$1 00 ¹	-	-	-
A 1	Boarding-house, Lowell.	66	11	-	Mill operatives.	-	-	-	-
A 7	Boarding-house, Lynn.	20	16	-	Operatives, ² dress- makers, clerks.	-	-	-	-
A 2	Boarding-house, Lowell.	10	60	-	Mill operatives.	-	-	-	-
A 9	Family, Boston.	1	1	-	Husband, machinist.	3 25 ³	-	-	-
	Average of 7 diet- aries.								
	French Canadian, Mass.								
B 6	Family, Holyoke.	2	2	2	Mill operatives.	1 35	\$0 90	-	-
B 4	Boarding-house, Hol- yoke.	8	7	3	" "	1 25	90	2 75	2 00
B 1	Family, Lawrence.	4	2	-	" "	4	90	-	-
B 5	Boarding-house, Hol- yoke.	6	4	-	" "	5	6	-	-
B 10	Family, Lowell.	2	1	-	Men, blacksmiths; woman, mill oper- ative.	2 00 ⁴	1 00	-	-
	Average of 10 diet- aries.								
	French Canadian, Canada.								
C 18	Boarding-house, Rivière du Loup.	15	-	-	All laboring peo- ple.	-	-	-	-
C 12	Family, St. John.	1	1	8		-	-	-	-
C 26	Family, Richmond.	1	1	3		-	-	-	-
C 21	Family, Sherbrooke.	1	1	2		-	-	-	-
C 6	Family, Quebec.	1	1	6		-	-	-	-
	Average of 13 diet- aries.								

¹ \$24.00 per week.² In shoe factories.³ \$19.50 per week.⁴ \$1.25 to \$1.75 per day.⁵ \$1.25 to \$1.50 per day.⁶ 90 cents to \$1.00 per day.⁷ \$600 per year.

each dietary. Except in the cases in which the sex of the adults and the ages of the children are not stated and must be assumed, the estimates seem to be reasonably close to the truth.

The two tables on pages 306-309 recapitulate the analyses of the dietaries, as estimated per man per day.

The table on page 310 summarizes in shorter form the principal results set forth in the three tables preceding.

Employments, Wages, etc., and Quantities and Costs of Food.

FOOD-MATERIALS PER MAN PER DAY.										Number of dietary.
QUANTITIES.					COSTS.					
Animal food.			Vegetable food.	Total food.	Animal food.			Vegetable food.	Total food.	
Meats, fish, etc.	Dairy products and eggs.	Total.			Meats, fish, etc.	Dairy products and eggs.	Total.			
lbs.	lbs.	lbs.	lbs.	lbs.	cts.	cts.	cts.	cts.	cts.	
.66	.82	1.48	2.97	4.45	9	7	16	9	25	A 11
.99	1.55	2.54	2.65	5.19	9	6	15	7	22	A 1
.71	.91	1.62	3.48	5.10	10	5	15	9	24	A 7
.98	1.29	2.27	2.66	4.93	10	5	15	7	22	A 2
1.36	1.64	3.00	4.17	7.17	24	12	36	11	47	A 9
.88	1.29	2.17	3.02	5.19	11	6	17	8	25	
.46	.21	.67	2.35	3.02	7	3	10	7	17	B 6
.95	.80	1.75	2.76	4.51	12	6	18	6	24	B 4
.92	.66	1.58	3.01	4.59	14	4	18	9	27	B 1
1.05	.39	1.44	4.25	5.69	14	5	19	9	28	B 5
1.28	1.51	2.79	4.40	7.19	18	11	29	10	39	B 10
.81	.70	1.51	3.44	4.95	11	5	16	8	24	
.36	.19	.55	1.65	2.20	4	2	6	5	11	C 18
.35	.44	.79	2.02	2.81	3	3	6	5	11	C 12
.63	.45	1.08	2.82	3.90	5	3	8	7	15	C 26
1.13	.55	1.68	2.43	4.11	9	4	13	6	19	C 24
.57	.98	1.55	2.25	3.80	5	5	10	6	16	C 6
.52	.45	.97	2.49	3.46	5	3	8	6	14	

Recapitulation of Analyses of Dieteries.

Number of dietary.	DIETARIES.	NUTRIENTS SUPPLIED BY DIFFERENT CLASSES OF FOOD-MATERIALS.									
		PROTEIN.				FATS.				CARBOHYDRATES.	
		Animal food.			Vegetable food.	Animal food.			Vegetable food.	Dairy products and eggs.	Vegetable food.
		Meats, etc.	Dairy products and eggs.	Total.		Meats, etc.	Dairy products and eggs.	Total.			
A 11	<i>Miscellaneous, Massachusetts.</i> Family, East Cambridge.	lbs. .07	lbs. .03	lbs. .10	lbs. .11	lbs. .13	lbs. .14	lbs. .27	lbs. .02	lbs. .03	lbs. 1.03
A 1	Boarding-house, Lowell.	.11	.06	.17	.12	.31	.18	.49	.01	.07	1.13
A 7	Boarding-house, Lynn.	.09	.04	.13	.12	.19	.12	.31	.02	.04	1.11
A 2	Boarding-house, Lowell.	.11	.05	.16	.13	.30	.13	.43	.01	.06	1.15
A 9	Family, Boston.	.17	.08	.25	.15	.31	.21	.52	.04	.07	1.29
	Average of 7 dietaries.	.11	.05	.16	.12	.24	.15	.39	.02	.06	1.11
	<i>French Canadians, Massachusetts.</i>										
B 6	Family, Holyoke.	.04	.02	.06	.12	.21	.06	.27	.02	-	1.09
B 4	Boarding-house, Holyoke.	.09	.04	.13	.08	.49	.09	.58	.01	.03	.69
B 1	Family, Lawrence.	.10	.03	.13	.12	.23	.07	.40	.01	.03	1.12
B 5	Boarding-house, Holyoke.	.10	.02	.12	.19	.47	.10	.57	.02	.01	1.21
B 10	Family, Lowell.	.15	.08	.23	.21	.48	.15	.63	.04	.05	1.70
	Average of 10 dietaries.	.08	.04	.12	.14	.34	.09	.43	.02	.02	1.19
	<i>French Canadians, Canada.</i>										
C 18	Boarding-house, Rivière du Loup.	.04	.01	.05	.11	.09	.08	.17	.02	-	.85
C 12	Family, St. John.	.05	.01	.06	.12	.07	.11	.18	.02	.02	.93
C 26	Family, Richmond.	.09	.02	.11	.12	.10	.10	.20	.02	.02	1.13
C 24	Family, Sherbrooke.	.14	.02	.16	.17	.17	.17	.34	.03	.02	1.16
C 6	Family, Quebec.	.08	.04	.12	.17	.08	.12	.20	.02	.04	1.09
	Average of 13 dietaries.	.07	.02	.09	.15	.10	.11	.21	.03	.02	1.14

Quantities of Nutrients Estimated per Man per Day.

TOTAL NUTRIENTS SUPPLIED.						Of every 100 parts of protein the different classes of food-materials furnish parts as below.				Number of dietary.
Hundredths of a pound.			Grams.							
Protein.	Fats.	Carbohydrates.	Protein.	Fats.	Carbohydrates.	Animal food.			Vegetable food.	
						Meats, fish, etc.	Dairy products and eggs.	Total.		
lbs.	lbs.	lbs.	grams.	grams.	grams.	per cent.	per cent.	per cent.	per cent.	
.21	.29	1.06	95	132	481	33	14	47	53	A 11
.29	.50	1.20	132	227	545	38	21	59	41	A 1
.25	.33	1.15	114	150	522	36	16	52	48	A 7
.29	.44	1.21	132	200	549	38	17	55	45	A 2
.40	.56	1.36	182	254	617	42	20	62	38	A 9
.28	.41	1.17	127	186	531	39	18	57	43	
.18	.29	1.09	82	132	495	22	11	33	67	B 6
.21	.59	.72	95	268	327	43	19	62	38	B 4
.25	.41	1.15	114	186	522	40	12	52	48	B 1
.31	.59	1.22	141	268	554	32	7	39	61	B 5
.44	.67	1.75	200	304	795	34	18	52	48	B 10
.26	.45	1.21	118	204	549	31	15	46	54	
.16	.19	.85	73	86	386	25	6	31	69	C 18
.18	.20	.95	82	91	431	28	5	33	67	C 12
.23	.22	1.15	104	100	522	39	9	48	52	C 26
.33	.37	1.18	150	168	536	42	6	48	52	C 24
.29	.22	1.13	132	100	513	27	14	41	59	C 6
.24	.24	1.16	109	109	527	29	8	37	63	

*Summary of Analyses of Dietsaries. Quantities and Costs of Foods and Quantities of Nutrients. Maximum, Minimum, and Average per Man per Day.**

QUANTITIES, COSTS, AND NUTRIENTS OF FOOD- MATERIALS.	A. Miscellaneous, Massachusetts.			B. French Canadian, Massachusetts.			C. French Canadian, Canada.		
	Maxi- mum.	Mini- mum.	Aver- age.	Maxi- mum.	Mini- mum.	Aver- age.	Maxi- mum.	Mini- mum.	Aver- age.
<i>Quantities of Food-Materials.</i>	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Meats, fish, etc., . . .	1.36	.63	.88	1.28	.46	.81	1.13	.35	.52
Milk, butter, cheese, and eggs,	1.70	.82	1.20	1.51	.21	.70	.98	.14	.45
Total animal food, . .	3.00	1.48	2.17	2.79	.67	1.51	1.68	.54	.97
Vegetable food, . . .	4.17	2.38	3.02	5.65	2.35	3.44	3.65	1.65	2.49
Total food,	7.17	4.12	5.19	7.26	3.02	4.95	4.89	2.20	3.46
<i>Costs of Food-Materials.</i>	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.
Meats, fish, etc., . . .	24	6	11	18	6	11	9	3	5
Milk, butter, cheese, and eggs,	12	4	6	11	3	5	7	1	3
Total animal food, . .	36	10	17	29	10	16	13	5	8
Vegetable food, . . .	11	6	8	13	6	8	8	5	6
Total food,	47	16	25	39	17	24	19	11	14
<i>Nutrients in Food-Materials.</i>	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Protein, . . . . .	.40	.21	.28	.44	.18	.26	.33	.16	.24
Fats, . . . . .	.56	.29	.41	.67	.28	.45	.39	.16	.24
Carbohydrates, . . .	1.36	1.05	1.17	1.75	.72	1.21	1.59	.85	1.16
Total nutrients, . . .	2.32	1.56	1.86	2.86	1.52	1.92	2.20	1.20	1.64
<i>Percentages of animal protein in total pro- tein of food,</i>	per ct.	per ct.	per ct.	per ct.	per ct.	per ct.	per ct.	per ct.	per ct.
	64	47	57	62	33	46	48	29	37

DISCUSSION OF ANALYSES.

The figures contained in the tables, with the details upon which they are based, afford material for far more extended discussion than our limits warrant. Attention is called to a few points, however, which ought not to be overlooked.

In the following table the averages of the analyses of dietsaries are succinctly set forth.

* The figures for "maximum" and "minimum" indicate the largest and smallest quantities, and those for "average," the averages, of all the dietsaries of each series. Thus the largest quantity of meats, etc., per man per day in any of the dietsaries of Series A was 1.36 lbs., the smallest 0.63 lbs., and the average of the 7 dietsaries of this series examined was 0.88 lbs. That the figures for "total" do not always equal the corresponding sum (for instance, the "Total animal food," maximum, series A, is less than the sum of the figures for meats, fish, etc., and for milk, butter, cheese, and eggs) is due to the fact that the factors which would make up the sum are from different dietsaries, while the figures for "total" are the maximum, minimum, etc., for individual dietsaries.

Averages of Analyses of Dietaries. Quantities and Costs of Foods and Quantities of Nutrients as estimated per Man per Day.

QUANTITIES, COSTS, AND NUTRIENTS OF FOOD-MATERIALS	Miscellaneous, Massachusetts.	French Canadian.	
		Massachusetts.	Canada.
<i>Quantities of Food-Materials.</i>	lb.	lb.	lb.
Animal,	2.17	1.51	.97
Vegetable,	3.02	3.44	2.49
Total,	5.19	4.95	3.46
<i>Costs of Food-Materials.</i>	cts.	cts.	cts.
Animal,	17	16	8
Vegetable,	8	8	6
Total,	25	24	14
<i>Nutrients in Food-Materials.</i>	grams.	grams.	grams.
Protein,	127	118	109
Fats,	186	204	109
Carbohydrates,	531	549	527
Total,	844	871	745
Parts of animal protein in 100 of total protein,	per cent. 57	per cent. 46	per cent. 37

From this table it appears that the French Canadian laboring man whose food we have examined consumes at home three and one-half pounds of food (including milk) per day. But when he comes to Massachusetts and works in a factory or engages in other manual labor, he consumes five pounds, while other laborers, factory operatives, mechanics, etc., in Massachusetts, whose dietaries have been examined, consume five and one-fifth pounds of food per man per day. The food of the French Canadian at home costs fourteen cents but in Massachusetts he expends twenty-four cents, while the food of the other Massachusetts laborers costs twenty-five cents per day. The nutrients in the food-materials show corresponding gradations, the Canadian having one hundred and nine grams of protein per day at home and one hundred and eighteen in Massachusetts, while the other Massachusetts laborers have one hundred and twenty-seven grams. The gradations in the carbohydrates are similar, save that the differences are smaller. The amount of fats is smallest in the dietary of the Canadian in Canada, but nearly the same in those of the Canadian and other laborers in Massachusetts. That the Canadian in Massachusetts should have more fat than other laborers while he has

so much less protein is apparently due to the larger proportion of salt pork in his meat.

Perhaps the most interesting fact set forth in this table is found in the proportions of animal and vegetable food. In Canada the French Canadian has one pound of animal food — meats, fish, milk, butter, cheese, eggs, etc. ; in Massachusetts he has a pound and a half, while his fellow-laborers of other nationalities have two and one-fifth pounds per man per day. There is a corresponding variation in the proportion of animal protein to the total protein of the food, the French Canadian at home having thirty-seven per cent, the same man in Massachusetts forty-six per cent, and other Massachusetts laborers fifty-seven per cent.

These figures are the expression of what we suppose to be a general law, namely, that where the conditions of life are otherwise approximately similar as in the different countries of Europe and America, not only the total amount of food, but, more especially, the amount of meat and other animal food consumed increases with the revenue of the consumer. We regret that corresponding statistics for laboring people in the different countries of Europe are not at hand, but feel confident that the outcome would sustain the proposition just made. It is a very familiar observation of those who have noted the habits of the ordinary people in European countries like Italy, Germany, and France, that the amounts of meat they consume are very small, and statistics show that their food is very apt to be deficient in protein.

In this connection it will be worth while to note briefly the results of some examinations of dietaries made in Middletown, Conn., a few months since. The figures are given as computed by Mr. I. S. Haynes, a member of the last graduating class of Wesleyan University, who, being interested in physiological chemistry, supplemented his regular work in the laboratory by some special studies which included, with the rest, examinations of dietaries of a students' club in the college and of the workmen employed in a brickyard not far from the city.

DIETARY OF STUDENTS IN MIDDLETOWN, CONN.

A large number of the students in Wesleyan University board in clubs. The club, which may have any number of members up to thirty, chooses one of its number as steward and arranges with a matron to cook and serve the food which he purchases. Many of the members having to pay their way through college, the majority are obliged and the rest are content to have the cost of their board made low even at the sacrifice of delicacies. While their diet is substantial and wholesome they regard it as plain and economical. They are mostly from the Eastern States and, coming from the class of families whose sons go to college, it seems fair to assume that their habits of eating formed at home would not differ materially from those of the more intelligent classes of people in that part of the country. While the habits of many are sedentary rather than active, they, nevertheless, take considerable muscular exercise. Out of two hundred sometimes seventy may be seen at once on the campus playing tennis and base ball. They are given to athletic sports in pleasant weather and many of them make use of the gymnasium in winter. They could hardly be credited with as much muscular exercise on the average as the laboring man doing moderate work, for whom standard rations are calculated, and they would, therefore, without doubt require somewhat less of protein as well as of the other nutrients in their food.

Mr. Haynes has taken the accounts of one of these clubs for a term of three months, and computed the amounts of the several kinds of food-materials purchased, and the quantities of nutrients in each and in the whole. He has then taken the number of days' board for which this food sufficed and thus calculated the average quantities of nutrients per day for each man to be:

Protein, 161 grams; Fats, 204 grams; Carbohydrates, 681 grams.

These figures are, perhaps, excessive, since they represent what the students paid for rather than the amounts actually consumed. The steward and some of the members of the club are of the opinion, however, that the amount of waste, that is to say, the material thrown away, was very small.

“All the meat and other available food that was not actually served to the men at the table,” said the steward, “was carefully saved and made over into hash and croquettes.” Indeed, for that matter, “men who work their way through college cannot afford to throw away their food. It costs too much.” But on investigating the matter more closely it appeared that a portion of the material served was left upon the plates and found its way into the garbage barrel or was given to an indigent colored woman, who came for it regularly. At Mr. Haynes’ suggestion the steward had the amounts rejected during one week weighed, and an estimate of its composition was made by them. If we take this estimate of the waste food of a week as a basis for the waste of the term, and assume that the rest was actually eaten, the daily consumption will be as follows :

CLASSIFICATION.										Protein.	Fats.	Carbohy- drates.
										Grams.	Grams.	Grams.
Purchased,	:	:	:	:	:	:	:	:	:	151	204	681
Thrown away,	:	:	:	:	:	:	:	:	:	13	19	-
Consumed,	.	.	.	.	.	.	.	.	.	148	185	681

DIETARY OF BRICKMAKERS IN MIDDLETOWN, CONN.

The proprietor of a brick yard in Middletown has furnished an estimate of the total amount of food-materials furnished to his men in a day. This Mr. Haynes computes to contain nutrients per man per day as follows :

Protein, 222 grams ; Fats, 263 grams ; Carbohydrates, 758 grams.

The laborers to whom this extraordinary amount of food was supplied were ordinary Canadians, Irishmen, and some native Americans. Their work is rather trying, but the proprietor makes it a point to secure good workmen, and finds one of the best means of doing so is to “give them good board, which they think more of than anything else.” He assures us that this is nearly all actually eaten, very little being thrown away. He says that he sometimes gets freshly arrived immigrants at Castle Garden, New York, and that he always finds they have been accustomed to eat little or no meat, and adds : “They

come to me in very poor condition, but it is wonderful to see how they pick up, even with their hard work."

COMPARISON WITH EUROPEAN DIETARIES.

That these dietaries give a complete representation of the quality or quantity of the food consumed by all classes of people is, of course, not claimed. The dietaries are those of persons, nearly all of whom work for wages and most for very little. While it is presumable that persons in more affluent circumstances pay for larger amounts of food and especially for larger proportions of meats and delicacies, whether they consume what they pay for or not, extended inquiries would be necessary to find out the actual facts. At the same time it is believed that these figures give a fair exhibit of the amounts and kinds of food ordinarily used by the laboring classes in the localities stated.

A proper estimate of the economy and fitness of these dietaries for their purpose will be facilitated by comparing them with dietaries of people in European countries whose conditions of life are such as to compel more rigid economy, and with standards based upon careful investigation as to the quantities of nutrients required for healthful nourishment. In the table which follows, such a comparison is made. The figures for European dietaries are collated by Playfair, Voit, and other well-known authorities. The standards are those mentioned in one of the preceding sections of this article.

Comparison of Dietaries Examined with European Dietaries and Standards.

DIETARIES.	NUTRIENTS PER DAY.		
	Protein.	Fats.	Carbo- hydrates.
<i>American.</i>	Grams.	Grams.	Grams.
French Canadians, working people, Canada (average),	109	109	527
French Canadians, factory operatives, mechanics, etc., Mass. (average),	118	204	549
Other factory operatives, mechanics, etc., Mass. (average),	127	186	531
Factory operatives, dressmakers, and clerks (boarding house), Lynn (A 7),	114	150	522
Glass blower, East Cambridge (A 11),	95	132	481
Machinist, Boston (A 9),	182	254	617
Students' club, Middletown, { Food purchased,	161	204	681
Brickmakers, Middletown, { Food actually consumed,	148	185	681
	222	263	758

Comparison of Dietaries Examined — Concluded.

DIETARIES.	NUTRIENTS PER DAY.		
	Protein.	Fats.	Carbohy- drates.
<i>European.</i>	Grams.	Grams.	Grams.
Sewing girl, London, England, 1863 (wages, 93 cents per week), . .	53	33	315
Farm laborer, Ireland,	92	42	519
Poorly paid laborer, Hildesheim, Germany (diet mostly potatoes), .	86	13	610
Ordinary mechanic, Munich, Germany,	131	68	494
"Well fed" tailor, England,	131	39	524
"Well paid" mechanic, Munich, Germany,	151	54	479
Average for adults with moderate exercise, England,	120	40	530
Brewery laborer, at severe labor, Munich, Germany,	190	73	600
Lumberman, Bavarian forest,	112	309	691
German soldier, peace footing,	117	26	547
German soldier, war footing,	151	46	522
German soldier, war footing, extraordinary dietary,	191	63	607
Voit's standard for laborer at moderate work,	118	56	500
Voit's standard for laborer at severe work,	145	100	450

The figures presented in this table are so clear as hardly to need explanation. In comparing the American with European dietaries, one cannot fail to be struck with the abundance of nutritive material in the former. The fat in the food of factory operatives in Massachusetts is larger in quantity than in that of any but the most bountiful of the European dietaries. While the quantities of the nutrients in the American dietaries are very large, those of fat as compared with the European figures are little less than enormous. It is probable, however, that the comparison is unfair in one respect. The figures represent in general the quantities of food supplied, not those actually eaten by the consumer. The difference between food purchased and that eaten, in the European dietaries, would be, it is believed, very small; while in many of the American ones it would probably be relatively larger. It would be an interesting study in social statistics for any one, willing to undertake it, to find out how much of the food, which the different classes of Americans pay for, is thus wasted. It is the general impression that the quantities of food which are thrown away or sold to the soapman are very large. It would on that account be natural to say that a very considerable proportion of fat in the American dietaries here examined should be deducted in order to get at the amounts actually eaten. But, as has already been explained, a little examination of the chemistry of the subject will indicate that in the meats, which

furnish the larger quantity of fat, so much of the fat occurs in particles either invisible or too small to be conveniently removed by the knife at the table, that the quantities of fat left upon the plate and thus rejected make at most but a small quantity of the fat in the meat, and, of course, a still smaller proportion of the whole amount in the food. And since allowance is made in the calculations for that which would be left with the butcher, the composition of the meats as actually sold being taken as the basis for the computation, any reasonable allowance for rejection of fat in this way would be equivalent to only a small quantity of the total amount in the dietary. In other words, the conclusion is unavoidable that the actual consumption of fat in our American dietaries is very large.

Even with the largest allowance that could reasonably be made for waste of nutrients, the amounts which must be consumed of the dietaries here studied are in many cases very large indeed as compared with the European dietaries and standards. As was stated in one of the preceding sections, the best results of research in the science of nutrition imply that a certain minimum quantity of protein is requisite for healthful nourishment and that all the protein above this shares with the carbohydrates and fats the function which may be roughly designated as serving for fuel, and that in this respect one pound by weight of fat is equivalent to two pounds or more either of protein or carbohydrates. The excessive quantities of fats in the American dietaries, therefore, made their nutritive power much larger as compared with the European dietaries than the figures taken by themselves would imply. In other words, the American dietaries contain, in general, not only excessively large quantities of food, but the particular kinds of nutrients, namely, fats, which weight for weight do the most work in the body, are the ones which are the most largely in excess.

IMPROVEMENTS IN DIETARIES.

As has been urged, the American dietaries here examined contain much larger amounts of food than are judged appropriate by those who have paid most attention to the study of the subject, a fact which is brought very clearly into view by comparing the American dietaries with the European standards in the preceding table. In general the excess seems to be due

to the meats and sweetmeats. In his examination of the students' dietaries above cited, Mr. Haynes has calculated that if one-half of the meats, dairy products, sugar, and apples and all the honey and tapioca had been left out and the rest properly utilized, the food would have still exceeded Voit's standard. His figures, condensed, are as below :

CLASSIFICATION.	Protein.	Fats.	Carbohy- drates.
	Grams.	Grams.	Grams.
Total purchased,	161	204	681
One-half of all the meats, milk, cheese, and eggs: one-half of all the sugar, molasses, and apples, and all the honey and tapioca together contained,	43	97	127
The remaining food-materials supplied,	118	107	554
Voit's standard for a laboring man,	118	50	500

That is to say, according to these figures, the young men of this club might have dispensed with one-half their meat and one-half their dessert and still have had more nutritive material in their food than the German standard requires for a laboring man at moderate work. Somewhat similar calculations have been made for two of the Massachusetts dietaries.

One of these, No. A 9, was that of a family in Boston, consisting of husband and wife. The husband is a machinist and earns nineteen and one-half dollars a week. The dietary furnishes seven and one-half pounds of food (including milk) and costs forty-seven cents per man per day. The following computation shows how the dietary might have been altered :

Suggestions for the Alteration of Dietary A 9.

DESCRIPTION.	FOOD-MATERIALS.			NUTRIENTS.		
	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohy- drates.
If from the dietary, which fur- nishes per man per day,	cents.	lbs.	\$	lbs.	lbs.	lbs.
Or, for 1.8 men in 30 days,	-	7.17	\$0 47	.40	.56	1.36
	-	387.6	25 38	21.5	29.8	73.5
We take out—						
Two-thirds of the meats, fish, etc.,	-	49	\$8 46	6.0	11.0	-
One-half of the dairy products and eggs,	-	44.4	3 25	2.1	5.6	1.8
One-half of the sugar and molasses,	-	9.8	74	-	-	9.3
Total deducted,		103.2	\$12 45	8.1	16.6	11.1
There will remain,		284.4	\$12 93	13.4	13.2	62.4
Or, per man per day,		5.27	24	.25	.24	1.15
Voit's standard,		-	-	.26	.12	1.10

In other words, if two-thirds of the meats and fish, one-half the dairy products and eggs, and one-half of the sugar and molasses had been omitted and the rest carefully utilized, the dietary would still have exceeded our standard in its amounts of nutrients, and the cost of the food would have been reduced one-half.

In the other, No. A 11, that of the family of a glass-blower in Cambridge, earning three and one-half dollars per day, the estimated quantity of food (including milk) was four and one-half pounds, costing twenty-five cents per man per day. The quantity of protein was rather smaller than our standard calls for, but the amount of fats was more than double that of the same standard. By taking in the place of the most expensive kinds of beefsteak the cheaper but no less wholesome round steak and shin, and in the place of one-half the lamb and three-fourths the salt pork and lard, substituting codfish and haddock, the amount of protein would be increased and that of the fats reduced to the standard, and about one-sixth of the cost would be saved.

Suggestions for the Alteration of Dietary A 11.

DESCRIPTION.	FOOD-MATERIALS.			NUTRIENTS.		
	Prices per lb.	Quantities.	Costs.	Protein.	Fats.	Carbohydrates.
If from the dietary which furnishes per man per day, . .	cents.	lbs.		lbs.	lbs.	lbs.
Or, for 12.6 men in 30 days, . .	-	4.45	\$0 25	.21	.29	1.06
	-	142.30	7 99	6.80	9.49	34 10
We take out—						
The whole of the beef steak, . .	28	6.0	\$1 68	0.8	1.0	-
One-half of the lamb,	15	2.5	38	0.4	0.6	-
Three-fourths of the salt pork, .	10	0.8	08	-	0.6	-
Three-fourths of the lard, . . .	10	0.7	07	-	0.7	-
One-half the dairy products and eggs,	-	13.1	1 11	0.6	2.3	0.6
Total deducted,	-	23.1	\$3 32	1.8	5.2	0.6
There will remain,	-	119.2	\$4 67	5.0	4.2	33.5
To which may be added—						
Beef shin,	5	5.0	\$0 25	0.7	0.1	-
Beef steak, round,	18	4.0	72	0 7	0.4	-
Fresh codfish,	10	5.0	50	0.6	-	-
Fresh haddock,	7	5.0	35	0.4	-	-
Salt codfish,	5	5 0	25	0.8	-	-
Total added,	-	24 0	\$2 07	3.2	0.5	-
There will then be,	-	143.2	\$6 74	8.2	4.7	33.5
Or, per man per day,	-	4.48	21	.26	.15	1.05
Voit's standard,	-	-	-	.26	.12	1.10

It is by no means claimed that the changes indicated in these calculations are exactly the ones which should be made. The proper adjustment of the dietary is a matter of convenience and palatability as well as chemical composition, but the figures cited will suffice to show that there is great room for improvement.

FOOD OF THE POOR IN BOSTON.

That the rich man becomes richer by saving and the poor man poorer by wasting his money is one of the commonest facts of daily experience. It is a fact too, with a pathetic side, for very often those who suffer most from want and are at the same time most anxious to economize are least able to do so. One great difficulty is that they do not understand how to save.

The agents of the Bureau in collecting the statistics of dietarys of series "A" have made inquiries of tradesmen as to the kinds of food the poor of Boston purchase and the prices they pay. Some of the results of these inquiries are as follows :

By poor people is meant those who earn just enough to keep themselves and families from want. When a groceryman or marketman is asked, "What is your experience in dealing with your poor customers in regard to the quality of food used by them?" the answer is, in almost every case, "Oh, they usually want the best and pay for it and the most fastidious are those who can least afford it."

In the matter of beef, for instance, the cuts most used for steak are the face of the round, costing from 18 to 20 cents per pound; the tip of the sirloin at from 20 to 25 cents, and rib roast at from 18 to 20 cents. They do not use the flank piece for steak, and would feel insulted if it were offered to them. The flour they use is the best. For butter they pay from 28 to 30 cents per pound at present prices. All their other groceries are such as are sold to first-class customers.

One man told his butcher that hard times were owing to the meanness of the rich and the extravagance of the poor, and that the poor helped make themselves so in the way they did their buying. They send their children after a pound of lard and take it home in a paper. The loss, even in this, is of some consequence to them in a year. A marketman who was

much interested in this investigation referred to the following newspaper extract as coinciding with his experience :

“ A woman stepped into one of the best class provision stores of Boston a few days since and called for a cut of ‘tenderloin steak.’ Now a tenderloin of beef is a very toothsome article of food, and no person need be blamed for valuing the enjoyment arising from its qualities of flavor and tenderness. But, as the price of this commodity ranges all the way from 40 to 75 cents per pound in these markets, it must be classed among luxuries by the average purchaser, and the customer above alluded to was well known to be a hard-working person, earning her living by a good deal of sweating of the brow, and constantly finding necessities hard enough to procure, let alone luxuries—in short, she was a washerwoman. In this instance the disproportion between ability and desire was so great and so evident that the marketman could not help suggesting that he had other ‘cuts’ of beef equally nutritious and tasteful, and which could be afforded at a moiety of the price charged for tenderloin. The advice was rejected, with strong signs of resentment, and the tenderloin was bought and paid for.

“ This transaction illustrates completely what is going on all the time in our communities, the woeful lack of consistency and appreciation in economical relations, and to how great extent folly and pride constitute elements in daily life and living. In the experiences of tradesmen who furnish the wherewithal to sustain human existence it is being repeated over and over again every day; and the class represented by this poor woman is by no means the only one affected. As to the underlying causes upon which such transactions are based, investigation reveals a curious foundation made up of pride, ignorance and indifference.”

That the above statements mean more than appears at first glance will be seen from a few moments’ consideration.

This washerwoman had her choice between, let us suppose, tenderloin at 40 cents, sirloin at 25 cents, round at 15 cents, and neck or shoulder at 8 cents per pound. Aside from gratification of pride or palate there is no advantage in purchasing tenderloin; the other pieces are just as nutritious and wholesome. The proper use of meat in nutrition is to furnish fat and especially protein. So far as the protein is concerned one part of the beef is as valuable for nourishment as another. Supposing these different pieces to have been of the usual

composition, the costs of protein would have been somewhat as follows :

Costs of Protein per Pound.

In neck	at 8 cents per pound,	.	.	.	\$0 33
In round	" 15 "	"	"	"	59
In sirloin	" 25 "	"	"	"	1 06
In tenderloin	" 40 "	"	"	"	2 40

That is to say, this good washerwoman paid four times as much for the protein in tenderloin as she need have paid if she had taken round steak and more than seven times as much as if she had been content with neck or shoulder.

Or, to put it in another way, if instead of taking the pound of tenderloin she had been content with a pound of round steak she would have got just about the same quantity of nutritive material. It would have been somewhat less tender and toothsome but just as nutritious and she would have saved 25 cents of her hard earned money ; and if she had taken the neck or shoulder which suffice for many a rich man's table the saving would have been still greater.

Another Boston butcher gives an account of his experience which accords exactly with the statements above quoted. He had often talked with poor people about this matter and found them generally very firm in their conviction that the dearest meats are the most nutritious and hence the most economical. He insisted particularly on the fact that while the ignorant poor invest their money so unwisely, many of his wealthy customers were in the habit of taking the coarser pieces which the poor refused. It is the old story of the economy of the rich and the wastefulness of the poor.

Part of the evil at least is due to ignorance. There can be no more truly Christian form of charity than the helping of worthy but uninformed people of limited incomes by instructing them how to economize in the purchase as well as in the use of their food. The most effective charity is that which helps the recipients to help themselves.

Some of the most interesting figures regarding the costs and quantities of food-materials in the Massachusetts and Canadian dietaries may be concisely summarized. It will be remembered that Series A, Miscellaneous, Massachusetts, includes dietaries

of factory and mill operatives, mechanics, and a few clerks, dressmakers, etc., of various nationalities, in Lowell, Lawrence, Lynn, East Cambridge, and Boston. Series B, French Canadians, Massachusetts, includes factory operatives and a few mechanics of Canadian origin, working in Massachusetts. Series C, French Canadians, Canada, includes similar people, mainly or entirely laboring classes in Canada.

The costs of the total food, per man per day, in the different dietaries as set forth in the tables, were :

SERIES.	Maximum.	Minimum.	Average.
	cents.	cents.	cents.
Miscellaneous, Massachusetts,	47	16	25
French Canadians, Massachusetts,	39	17	24
French Canadians, Canada,	19	11	14

The costs of the animal food, the meats, fish, dairy products and eggs, were :

SERIES.	Maximum.	Minimum.	Average.
	cents.	cents.	cents.
Miscellaneous, Massachusetts,	36	10	17
French Canadians, Massachusetts,	29	10	16
French Canadians, Canada,	13	5	8

The total quantities of food, including milk, per man per day, were :

SERIES.	Maximum.	Minimum.	Average.
	lbs.	lbs.	lbs.
Miscellaneous, Massachusetts,	7.17	4.12	5.19
French Canadians, Massachusetts,	7.26	3.02	4.95
French Canadians, Canada,	4.89	2.20	3.46

The total quantities of animal food were :

SERIES.	Maximum.	Minimum.	Average.
	lbs.	lbs.	lbs.
Miscellaneous, Massachusetts,	3.00	1.43	2.17
French Canadians, Massachusetts,	2.79	0.67	1.51
French Canadians, Canada,	1.63	0.54	0.97

The proportions of animal protein in total protein were :

SERIES.	Maximum.	Minimum.	Average.
	Per cent.	Per cent.	Per cent.
Miscellaneous, Massachusetts,	64	47	57
French Canadians, Massachusetts, . . .	62	33	46
French Canadians, Canada,	48	29	37

The total quantities of nutrients (protein, fats, and carbohydrates), expressed in hundredths of a pound, were :

SERIES.	Maximum.	Minimum.	Average.
	lbs.	lbs.	lbs.
Miscellaneous, Massachusetts,	2.32	1.56	1.86
French Canadians, Massachusetts,	2.86	1.52	1.92
French Canadians, Canada,	2.29	1.20	1.64

Among the most noticeable features of the dietaries examined are :

1. The very large quantities of food, especially in the dietaries of factory and mill operatives, mechanics, and other people engaged in manual labor in Massachusetts and Connecticut.

2. The very large amounts of animal food, especially in the dietaries just mentioned.

3. The quantities of fat, which are large in nearly all and extremely large in many of the dietaries. The fat comes mostly from the meats, especially pork, and from butter and lard.

The quantities of total nutrients and of fats are the more striking when compared with those of the European dietaries, as is done in the table on pages 315 and 316, *ante*. Thus the total weight of nutrients per man per day varies in the Massachusetts dietaries from 690 grams (1.52 pounds) to 1,053 grams (2.32 pounds), while in the European dietaries the range is from 401 to 1,112 grams, or, omitting the dietaries of the London sewing girl and the Bavarian lumberman as very exceptional and abnormal, from 653 to 863 grams. The fats in the European dietaries, omitting the case of the Bavarian lumberman, range from 13 to 100 grams, though in some

instances not here quoted they somewhat exceed 100. In the Massachusetts dietaries the amount of fat is in no case less than 127 and reaches, in one instance, 304 grams. If common usage in Europe and the standards which are currently accepted there are correct expressions of the proper quantities of food and of fat for healthful nutrition, the quantities of total food, of meats, and especially of fats in the dietaries here reported are in general needlessly large, and in some instances excessively so.

These data suggest numerous questions such as :

1. How much more food of the American than of the European dietaries is wasted, that is, not eaten?
2. How much superiority of the American workingman is due to his more liberal diet?
3. How much injury is done to health by over-eating in this country?

In brief, the dietaries thus studied all point in one direction and indicate that in this country a large excess of food is consumed not only by well-to-do people, but also by those in moderate circumstances, mechanics, operatives in mills and factories, etc.

The excess of food consists mainly of meats and sweetmeats. Common observation would imply that of this excess a considerable part is simply thrown away. But it can hardly be doubted that in many cases much more food than is needed is actually taken into the system. If the opinions of our best physiologists and physicians are to be accepted, this overloading of the alimentary organs is seriously injurious to health.

The animal foods are pecuniarily the most costly, as estimated by the amount of nutritive material which they furnish for a given sum of money. The expensiveness of the nutrients in the animal foods, together with the large excess, makes the use of meats and dairy products in such large quantities doubly uneconomical.

In numerous cases the dietaries could be so altered as to make them at once less expensive, equally wholesome and palatable, and much more healthful.

One of the most interesting and important facts of all is the very common practice of the poor to purchase the more expensive food-materials, especially meats, when food obtainable at

only a fraction of the cost would be equally wholesome and nutritious.

If the further study of this matter should confirm these results, as there seems to be good ground to expect would be the case, it would become a serious question whether a reform in the dietary habits of a large portion of our people, including the classes who work for small wages, is not greatly needed, and whether this reform would not consist in many instances in the use of less food as a whole, and in many more cases in the use of relatively less meat and larger proportions of vegetable foods.

PART IV.

ART IN INDUSTRY.

PART IV.

ART IN INDUSTRY.

Under the influence of modern progress, an essential feature of which is the extension of the railway system, industrial conditions in the United States are undergoing a change. Manufacturing towns need no longer be located upon rivers or near the seaboard, but may be established near the sources whence the raw materials are obtained. The cotton fields of the South, our fertile territory in the Northwest, and the great central belt rich in textile fibres, metals, and timber, will in the future vie with the East in the establishment of industrial enterprises. Even now the West and South are coming forward as competitors with Massachusetts, and while we recognize that by the exercise of proper foresight the progress of our own State may be wonderfully enhanced by the development of these districts, it is apparent that during that development, unless Massachusetts lifts herself above her present industrial plane, she may find herself engaged in a serious struggle for supremacy, and perhaps equality, as a producer of the lines of goods for which she has long been noted, — a struggle that may result disastrously to her manufacturing industries, no matter how well established such industries seem at present. Indeed, the struggle has evidently begun.

Plainly if we are to hold our own industrially against enterprising new comers it must be by improving the quality of our products, so that if the centre of production of the coarser grades of goods passes elsewhere the manufacture of the finer grades may still be left in Eastern hands.

To this end, the art element as applied in industry becomes an important factor, and, if present tendencies may be regarded as prophetic, will become at no distant day still more important.

The questions then arise, how far does Massachusetts recognize this factor; what are we doing to encourage and develop the art idea in industry; has art yet entered our industrial field, and, if so, with what results; are the first steps taken in the direction of so improving the skill and taste of our workmen that by producing articles of finer design and quality we may in the future industrial struggle avoid the shock of competition by raising the standard of our products; and, lastly, is the popular appreciation of art being cultivated among us so as to foster that pervasive public sentiment which becomes at once the source and inspiration of all high art endeavor?

These are important questions and to answer them fully one must enter upon a broad field of inquiry. Our present consideration of the topic, so far from being exhaustive, is to be regarded as merely preliminary to a full investigation which may be undertaken later. Its object is to stimulate thought upon the subject, to outline briefly some of the features of what must soon be an important phase of our industrial development; and while the facts here presented may have slight statistical value, owing to the limited field we have thus far been able to cover, they will at least serve as a basis for future investigations, and assist in directing attention toward the art side of industry in Massachusetts. With that hope they are presented.

ART AS A PROFESSION.

As the first division of our subject we present some facts relating to those workers who devote themselves to art as a profession. Believing that the social and economic conditions surrounding the professional artist might determine to some degree the state of the art atmosphere, if we may use that term, in Massachusetts, a comprehensive schedule was prepared and sent to leading artists, 71 of which have been returned, each more or less completely filled.

The questions contained in the schedule were intended, first, to ascertain if the artists as a rule were following art as a per-

manent profession, — whether art as an industry was profitable or not. We wished first of all to know whether our artists were painting simply for pastime or purely from a love for art, or whether they proposed to secure a livelihood from their work ; in other words, whether or not they intended to make their work pay.

Next, we sought to know whether our artists had thus far had the good fortune to obtain the best possible art education, or what its extent had been ; and whether the highest art education for those who are to embrace art as a profession was appreciated in this State. Questions were also asked as to the cost of education to the artist, and to determine the comparative advantages or disadvantages arising from a foreign or a native art education.

The schedule, if filled, would also disclose whether the artist was following the highest bent of his ambition, or was supporting himself by a lower grade of art work. For instance, he might be earning a living by drawing for reproduction after having educated himself for figure painting, portraiture, or sculpture. Under such circumstances, either from lack of appreciation and patronage or otherwise, he would be working below his ideal, and, to a certain extent, from an art standpoint unsuccessful, although in receipt of a good income. Each artist was also requested to give his individual opinion as to whether his congenial art specialty was appreciated in this country as an art and as an industry, and as to what he would recommend to awaken a deeper interest in the fine arts, and to secure a higher artistic standard, and a better financial return to artists.

It was fair to assume that if the art element was to make itself felt in our industries, those who were devoting themselves to art work might be a moving force toward the desired end. By genius and training artists should be fitted to be the leaders in such a movement. The Bureau was aware of a feeling prevalent among artists that their work was not on the whole meeting with the recognition it should receive. The first step toward progress is taken when the limitations of the present are thoroughly comprehended and a desire for improvement awakened, and while securing such information as would indicate the condition of art as it appears to art workers as the

basis of an investigation into a special department of art work, we hoped also to bring the difficulties under which artists conceive themselves to be working prominently forward, together with such suggestions as to the removal of these difficulties as might be prompted by the disclosures made.

In portraying social conditions facts rather than opinions are to be desired. Generalizations founded on ascertained facts gleaned from the broadest possible field are of value. They have a scientific groundwork that cannot be set aside. Individual opinion may modify the general result, and should be given due weight as part of the evidence in the case, but ought not to be relied on as the basis of argument. Upon this principle the investigations conducted by this Bureau have proceeded, and the schedules to artists, as will appear from the synopsis which we have given of the questions they contained, were very carefully prepared to secure the essential facts respecting the life and work of artists in Massachusetts. The Bureau was pledged, as invariably in similar cases in the past, to an entirely impersonal use of these facts; and it is to be regretted that more schedules were not returned by those to whom they were sent, and that in those returned many deficiencies appear. Otherwise the results, so far as concerns that particular branch of the investigation in which artists are most interested, would have been more valuable.

Of the 71 artists who have returned schedules, 55 are native born, 8 foreign born, and 8 have not stated their nativity. Of the native born 51 have native born parents, and 4 are of foreign parentage. Thirty-eight of the 71 are single, 27 married, and 6 do not state their conjugal condition. The replies then, it will be seen, are in large proportion from native artists of American parentage, familiar it may be assumed with American traditions, and unhampered by the conventionalism inbred in older communities; while at the same time a minority are of foreign extraction developing their art instincts under American influences. Less than 50 per cent have families dependent upon them for support.

As to the time these artists have been engaged in art work, 17 do not reply; the periods of service of the remaining 54 are shown in the following table:

Time Employed in Art Work.

TIME EMPLOYED.	Number.	TIME EMPLOYED.	Number.	TIME EMPLOYED.	Number.
2 years, . .	1	12 years, . .	1	33 years, . .	1
3 years, . .	1	13 years, . .	3	40 years, . .	3
4 years, . .	1	14 years, . .	1	42 years, . .	1
5 years, . .	7	15 years, . .	4	44 years, . .	1
6 years, . .	4	16 years, . .	2	51 years, . .	1
7 years, . .	5	18 years, . .	1	55 years, . .	1
8 years, . .	3	19 years, . .	1	No reply, . .	17
8½ years, . .	1	20 years, . .	1		
9 years, . .	1	26 years, . .	1		
10 years, . .	6	31 years, . .	1	Total, . .	71

Almost every degree of experience is here represented, from the veteran who has devoted nearly three-score years to the pursuit of his profession, and who is familiar with the changes which have occurred in the attitude of the public towards it, to the novice who has just entered upon his chosen work.

The character of the work performed by those making returns is shown in the following tables, the first indicating the medium employed in rendition by the artist, and the second the special branch of art work pursued :

Medium Employed in Art Work.

MEDIUM EMPLOYED.	Number.	MEDIUM EMPLOYED.	Number.
Oil,	16	Stone and clay,	3
Oil and water color,	9	Terra cotta,	1
Oil, water color, black and white,	14	All mediums,	3
Oil and black and white,	8	No reply,	8
Water color,	3		
Water color and black and white,	5	Total,	71
Pastel and black and white,	1		

Branches of Art Work Pursued.

BRANCH PURSUED.	Number.	BRANCH PURSUED.	Number.
All branches,	1	Landscape and flowers,	5
Architectural and decorative design,	3	Landscape and portraits,	4
Art teaching,	3	Landscape, flowers, and figures,	1
Designing (carpets, wall paper, etc.),	2	Marine,	4
Figures, etc. (in stained glass),	1	Metal engraving,	1
Figures and still life,	1	Portraits and figures,	11
Flowers,	1	Portraits and game,	1
Flowers and still life,	1	Portraits and photography,	1
Illustrating (for publications),	2	Sculpture,	4
Landscape,	8	Wood engraving,	1
Landscape and animals,	2	No reply,	9
Landscape and figures,	4		
		Total,	71

From these statistics it appears that landscape art is pursued

by nearly 40 per cent of the artists from whom replies have been received, although many include other branches of art work. Eleven, or nearly 18 per cent, devote themselves to portraiture and figure painting exclusively. The remaining replies cover almost every art specialty. Oil is the favorite medium employed.

We now bring forward a series of tables relating to the education received by these artists to fit them for their work. The first table exhibits the number, by sex, who were educated at home, abroad, and at home and abroad respectively :

Number receiving Art Education at Home, Abroad, and at Home and Abroad.

WHERE EDUCATED.	Males.	Females.	Total.
At home,	21	9	30
Abroad,	14	1	15
At home and abroad,	15	4	19
No reply,	7	-	7
Totals,	57	14	71

Disregarding the seven who have not replied, it appears that nearly 50 per cent of the respondents have had no advantage of foreign training, while about 25 per cent were educated entirely abroad, and the others were able to supplement their home training by a period of foreign study.

The sources of native instruction are indicated in the next table, which presents the institutions in which those educated at home received their training :

Sources of Instruction at Home.

SOURCES OF INSTRUCTION.	Males.	Females.	Total.
Cooper Institute, New York,	1	-	1
Cooper Institute, and private instruction,	-	1	1
Lowell Institute, and Museum of Fine Arts, Boston,	1	-	1
Lowell Institute, Boston, and private instruction,	1	-	1
Lowell School of Design, Boston, and private instruction,	-	1	1
Museum of Fine Arts, Boston,	4	-	4
Museum of Fine Arts, Boston, and Art Students' League, New York,	-	1	1
Museum of Fine Arts, Boston, Art Students' League, New York, and private instruction,	-	1	1
Museum of Fine Arts, Boston, and private instruction,	2	-	2
Normal Art School, Boston,	-	1	1
Normal Art School, Boston, and private instruction,	1	2	3
Private teachers,	6	2	8
Self-instructed,	5	-	5
Totals,	21	9	30

Of those educated entirely in this country 26.6 per cent were instructed by private teachers only; 16.6 per cent were self-instructed, that is, acquired their education by the study of such works of art as were accessible to them, by observing the work of other artists, etc. The others were taught in art schools, of which that maintained by the Museum of Fine Arts, Boston, received the greatest number. Most of these have enjoyed private instruction besides that received at the schools.

A similar table follows showing the sources of instruction of those educated entirely abroad:

Sources of Instruction Abroad.

SOURCES OF INSTRUCTION.	Males.	Females.	Total.
Academy of Turin,	1	-	1
French Art schools,	-	1	1
Private teachers,	8	-	8
Royal Academy, Munich,	1	-	1
Royal Academy, Munich, and private instruction,	1	-	1
Royal Academy, Munich, Royal Academy of Arts, London, and private instruction,	1	-	1
Royal Academy of Arts, London,	1	-	1
School of Fine Arts, Paris, and private instruction,	1	-	1
Totals,	14	1	15

About 50 per cent of the foregoing were taught entirely by private teachers. The next table presents equivalent facts concerning those artists who were educated both at home and abroad:

Sources of Instruction at Home and Abroad.

SOURCES OF INSTRUCTION.	Males.	Females.	Total.
McMicken School of Design, Cincinnati; Royal Academy, Munich, and private instruction,	1	-	1
Museum of Fine Arts, Boston, and private instruction, foreign,	2	-	2
Normal Art School, Boston, and private instruction, foreign,	1	1	2
Private instruction,	6	3	9
Self-instructed,	3	-	3
Not stated,	2	-	2
Totals,	15	4	19

Of the 19 educated both at home and abroad, 9 received private instruction only, while 5 supplemented school instruction at home with private tuition abroad.

The length of time devoted to acquiring an art education is indicated in the following table:

Time devoted to Art Education.

TIME.	EDUCATED AT HOME.			EDUCATED ABROAD.		
	Males.	Females.	Total.	Males.	Females.	Total.
1 year,	1	1	2	-	1	1
2 years,	1	1	2	1	-	1
3 years,	7	-	7	1	-	1
4 years,	-	2	2	1	-	1
4½ years,	1	-	1	-	-	-
5 years,	2	3	5	3	-	3
6 years,	2	1	3	2	-	2
7 years,	2	-	2	4	-	4
9 years,	-	-	-	1	-	1
12 years,	-	-	-	1	-	1
Not given,	5	1	6	-	-	-
Totals,	21	9	30	14	1	15

Time devoted to Art Education — Continued.

TIME.			EDUCATED AT HOME AND ABROAD.		
At Home.	Abroad.	At Home and Abroad.	Males.	Females.	Totals.
6 months,	1 month,	7 months,	-	1	1
2 years,	3 months,	2 years, 3 months,	1	-	1
3 years,	4 months,	3 years, 4 months,	-	1	1
1 year,	2 years, 5 months,	3 years, 5 months,	1	-	1
3 years,	1 year,	4 years,	1	2	3
4 years,	1 year,	5 years,	1	-	1
5 years,	1 year, 6 months,	6 years, 6 months,	1	-	1
6 years,	6 months,	6 years, 6 months,	1	-	1
2 years,	4 years, 6 months,	6 years, 6 months,	1	-	1
5 years,	2 years,	7 years,	1	-	1
6 years,	1 year,	7 years,	1	-	1
5 years,	2 years, 3 months,	7 years, 3 months,	1	-	1
-*	3 years,	-*	1	-	1
-*	4 years, 6 months,	-*	1	-	1
-*	-*	-*	3	-	3
Totals,			15	4	19

* Time not stated.

From this table it is seen that, for those who reported the total time devoted to art education, the average time is 4.02 years for those who were educated at home; 5.73 years for those who were educated abroad, and 4.81 years for those who were educated both at home and abroad. The average time for all, irrespective of where their art education was received, is 4.71 years, the shortest time being seven months and the longest 12 years.

The following table presents the cost of an art education as returned in the schedules :

Cost of Art Education.

Cost.	EDUCATED AT HOME.			EDUCATED ABROAD.		
	Males.	Females.	Total.	Males.	Females.	Total.
\$30,	-	-	-	-	1	1
50,	1	-	1	-	-	-
200,	-	1	1	-	-	-
300,	-	1	1	-	-	-
400,	-	1	1	-	-	-
450,	1	1	2	-	-	-
500,	1	-	1	1	-	1
700,	1	-	1	-	-	-
805,	-	1	1	-	-	-
1,000,	1	-	1	-	-	-
1,500,	1	-	1	-	-	-
2,400,	-	-	-	1	-	1
2,500,	-	-	-	1	-	1
2,800,	-	-	-	1	-	1
3,000,	-	-	-	2	-	2
3,200,	-	-	-	1	-	1
10,000,	-	-	-	1	-	1
Not given,	15	4	19	6	-	6
Totals,	21	9	30	14	1	15

Cost of Art Education — Continued.

Cost.			EDUCATED AT HOME AND ABROAD.		
At Home.	Abroad.	At Home and Abroad.	Males.	Females.	Total.
\$90,	\$200,	\$290,	-	1	1
300,	100,	400,	1	-	1
300,	1,100,	1,400,	1	-	1
750,	1,500,	2,250,	1	-	1
1,000,	3,000,	4,000,	1	-	1
500,	—*	—*	1	-	1
—*	1,000,	—*	1	-	1
—*	1,250,	—*	1	-	1
—*	1,500,	—*	1	-	1
—*	—*	—*	7	3	10
Totals,			15	4	19

* Amount not stated.

The average cost of an art education at home as indicated above is \$577.73; of an education abroad, \$3,047.78; while those educated both at home and abroad expended on the average \$1,668, the average for all being \$1,685. In computing these averages only those returns presenting total amounts expended have been used.

Of the number educated at home the schedules show that four were assisted to the extent of the cost of their education; three were assisted, the amount of assistance not being stated; two received moderate assistance, and 21 do not report that

they were assisted at all. Of those educated abroad, three were assisted to the extent of the cost of their education; one received about two-fifths of the cost of his education, and 11 do not report any assistance. Of those educated both at home and abroad, two were assisted to the extent of the cost of their education; one received \$1,000; one was assisted, the amount of assistance not being stated; one was slightly assisted; and 14 do not report any assistance.

So far as these schedules are indicative it appears that previous to the practice of the artist's profession an average period of study is required about equivalent to the ordinary college course; that at present the training of our artists is about equally due to home and foreign instruction; that only a limited number are able to secure their entire education abroad, if that were desirable; that the cost of foreign instruction is much greater than that at home; and that private tuition is preferred to that received in classes, or is considered desirable in addition to class instruction. We do not desire to attach more importance to these generalizations than is warranted by the volume of testimony upon which they rest. Whether a larger number of schedules would have changed these results it is impossible to say, but probably not. The range of art work covered by the schedules received is so broad, and the artists represented so various in experience and position, that the results are in considerable degree typical, and have a positive value.

Thirty-seven schedules are sufficiently complete to enable us to present comparisons of income, expenses, and miscellaneous personal statistics. We do this in the three following tables, the first table relating to income: the second table to expenses, and the third table to the age, conjugal condition, number of dependents, education, branch of art pursued, and years engaged in work, of the 37 artists whose income and expenses are given in the two tables preceding. The schedule numbers in the margin being identical in each table permit cross references, line for line, for purposes of comparison.

Statistics of Expenses — Concluded.

NUMBER OF SCHEDULE.	For living, house rent, clothes, etc.	For studio rent.	For art materials.	For art literature.	For travel, sketching, etc.	For assistants, models, etc.	For associations, clubs, etc.	For other purposes.	Average total yearly expenses.
19,	\$1,200	\$300	\$100	-	\$75	\$20	-	\$75	\$1,770
20,	-	-	-	-	-	-	-	-	-
21,	-	-	-	-	-	-	-	-	-
22,	-	-	-	-	-	-	-	-	1,000
23,	-	-	-	-	-	-	-	-	1,000
24,	-	-	-	-	-	-	-	-	1,000
25,	600	360	150	\$50	100	100	\$30	-	1,330
26,	800	150	350	-	-	-	-	-	1,300
27,	600	600	150	15	200	30	-	50	2,095
28,	-	-	-	-	-	-	-	-	2,000
29,	500	500	50	-	-	100	30	500	1,680
30,	700	500	120	30	-	30	18	400	1,798
31,	-	-	-	-	-	-	-	-	2,500
32,	900	360	100	-	50	20	-	170	1,600
33,	-	-	-	-	-	-	-	-	550
34,	1,200	300	100	-	-	300	25	375	2,300
35,	-	-	-	-	-	-	-	-	1,500
36,	2,000	475	250	-	150	100	-	-	2,975
37,	2,500	420	150	25	200	40	15	-	3,350

Miscellaneous Personal Statistics.

NUMBER OF SCHEDULE.	Age.	Conjugal condition.	Number of dependents.	Where educated.	Cost of education.	Years spent in study.	Branch pursued.	Years engaged in work.
1,	Years. 40	Single	-	At home	-	-	Landscape, flowers, figures.	5
2,	28	Single	-	At home	\$400	5	Designing.	5
3,	52	Single	-	At home	450	1	Teaching art.	19
4,	31	Single	-	At home	805	4	Landscape, flowers.	7
5,	33	Single	-	At home	200	-	Landscape, flowers.	8½
6,	55	Married	1	At home	300	6	All branches.	13
7,	29	Single	-	At home	-	5	Teaching art.	-
8,	64	Married	1	At home	-	-	Landscape, portraits.	44
9,	31	Single	-	At home	50	1	Marine.	5
10,	60	Married	5	At home	-	1	Teaching art.	40
11,	44	Single	1	At home	-	-	Designing.	15
12,	30	Married	4	At home	-	7	Designing.	13
13,	31	Married	4	At home	-	3	Illustrating.	6
14,	23	Single	-	At home	1,500	1	Sculpture.	2
15,	40	Married	4	At home	-	6	Portraits, photography.	20
16,	36	Single	2	At home	-	-	Wood engraving.	16
17,	32	Single	-	At home	700	3	Landscape.	7
18,	27	Single	1	At home	1,000	3	Portraits and figures.	5
19,	30	Married	6	At home	500	2	Landscape, figures.	7
20,	31	Single	-	At home	-	6	Portraits and figures.	10
21,	42	Married	1	At home and abroad	290	7-12	Landscape, flowers.	18
22,	25	Single	-	At home and abroad	1,250	3½	Portraits and figures.	8
23,	45	Single	2	At home and abroad	400	4	Landscape.	5
24,	26	Single	-	Abroad	-	5	Portraits and figures.	-
25,	40	Single	-	Abroad	10,000	12	Portraits and figures.	-
26,	42	Married	1	Abroad	-	7	Landscape.	6
27,	22	Single	-	Abroad	2,500	5	Portraits and figures.	10

Miscellaneous Personal Statistics — Concluded.

NUMBER OF SCHEDULE.	Age.	Conjugal condi- tion.	Number of de- pendents.	Where educated.	Cost of educa- tion.	Years spent in study.	Branch pursued.	Years engaged in work.
	Years.							
28, . . .	—	Married	1	Abroad	\$3,200	4	Portraits and figures.	9
29, . . .	28	Single	—	Abroad	3,000	6	—	7
30, . . .	26	Single	—	Abroad	500	12	Portraits and figures.	8
31, . . .	39	Married	2	Abroad	2,400	3	Portraits and figures.	10
32, . . .	50	Married	2	Abroad	30	1	Portraits and figures.	26
33, . . .	28	Single	—	At home and abroad	4,000	6½	Figures and still life.	—
34, . . .	40	Married	5	At home and abroad	1,400	7	Designing.	15
35, . . .	67	Single	3	At home and abroad	—	7	Metal engraving.	51
36, . . .	26	Single	2	At home and abroad	2,250	5	Illustrating.	5
37, . . .	25	Married	2	At home and abroad	—	6½	Landscape, figures.	7

The average total yearly income, as shown in the first table, is \$1,468.14. Very few returns are sufficiently full to permit comparisons as to the details composing total income. So far as can be determined from those that are complete, studio sales greatly exceed in amount those by auction, or even by dealers; teaching is a material reliance, and in several cases other sources than purely art work contribute to income.

The average total yearly expenses, as shown in the second table, are \$1,435.84, the average being based upon 31 returns that are complete in the item of total expenses. Number 6 is a married female and cannot compute her expenses. Numbers 7, 16, 18, 20, and 21 make no complete return of expenses, although number 16 states upon his schedule that his "expenses are always less than his income." The average total income shown by the same 31 returns from which the above average total expenses are derived is \$1,522.45. Both of the averages show a surplus of income over expenses, and the last, which is perhaps the fairer, inasmuch as exactly the same elements enter into the comparison, shows a surplus of 5.6 + per cent of income remaining after payment of expenses. While such a margin does not ensure the possession of wealth, it would, if continued through the normally productive period of life and carefully invested, go far towards providing a competency, and such a condition as here disclosed would seem to denote fair

prosperity on the part of the artists represented. Of course many of the returns considered separately do not indicate equal prosperity; on the other hand many show a condition above it, else the average would not stand so high; and while we note that the number of returns is limited, it should be remembered, as before pointed out, that the range represented by them is broad, and that the lack of numbers is thus partially offset.

The analysis of the statistics in these tables brings to light some interesting facts. For instance, schedule number 1 reports an average yearly income of \$670, and expenses amounting to \$950. The respondent is a female, single, with five years' experience in her profession. Number 14, a single male, also finds his expenses more than his receipts. The same is true of numbers 29 and 30, both single males. Of the married men, numbers 12, 19, and 37 fail to make their income equal their expenses. Number 12, with an income of \$800 and expenses \$850, has four dependent upon him for support. Number 19, with six dependent upon him for support, reports an income of \$1,550 and expenses aggregating \$1,770. Number 37 shows receipts averaging \$3,110, and expenses \$3,350, with but two dependent upon him for support. In the last two cases, the item for living, house rent, clothes, etc., is apparently very large.

Analyzing the returns to discover the effect of education upon income, we may divide them into two classes, those whose education cost \$1,000 or less, and those whose education cost more than \$1,000. We find the annual income of the first class to be \$1,123.92, and the average time employed in work, 10.3 years; of the second class, the average income is \$1,840, and the average period of employment, 8.25 years. These results indicate, so far as they go, that the more thorough training supposed to be represented by the higher cost secures public appreciation, and enables its possessor to command a higher relative income in a shorter time.

Of course other considerations affect income besides that of education. Of these probably the most potent is the kind of art work pursued by the artist. Analyzing the returns once more, and classifying them according to the leading art specialty pursued, the following results appear:



ART SPECIALTY.	Number of Persons.	Average Yearly Income.
Landscapes, etc.,	11	\$1,349 27
Portraits and figures,	11	1,540 91
Designing,	4	1,200 00
Teaching art,	3	1,833 33
Engraving,	2	1,587 50
Illustrating (for publications),	2	3,025 00
Not classified,	4	751 00

The facts thus brought out afford a glimpse of the recognition artists are receiving in Massachusetts, and indicate the use we should have made of other schedules had we received them, in which event the value of our deductions would have been increased in proportion to the increase of material at our command. The results are entirely favorable to the pursuit of art as an industry, and so far as the body of artists represented is concerned indicate a fair degree of support on the part of the public. Let us once more remind the reader that these artists are so various in experience, education, and in the character of the art work pursued, that the schedules, although limited in number, may be regarded as typical. We may add also that although our use of the material supplied by them must, for obvious reasons, be impersonal, yet many of the returns are from artists whose names, were we permitted to present them, would be recognized as those of leading members of the profession. Others, it is true, are from younger men who have their reputation yet to make. Thus all classes are represented.

We have thus far considered this branch of our subject in its pecuniary aspect principally. The artist's life has another side, — a side that many artists would consider the more important. This concerns the appreciation of art as *art*, without regard to the financial element immediately involved in its pursuit. Does the public to which the artist appeals recognize the difference between the good and bad in art; is it controlled by fashion, or has it the critical faculty so developed as to stimulate the artist to put forth his best, under the promise of prompt recognition of whatever of value appears in his work?

Upon these points we do not desire to express an opinion. It is certain that without this artistic sentiment in the community art cannot hope to flourish, nor can we expect the art element to influence our industries. In order to secure the

testimony of artists upon this matter, the schedules contained questions requesting an expression of opinion upon two points,

First, "Do you consider that your congenial art specialty is appreciated in this country as an *art*—also as an industry?"

Second, "What would you recommend to awaken a deeper interest in the fine arts in America, and to secure a higher artistic standard and a better financial return?"

These opinions we now reproduce. When their authors are represented in the tables preceding, on pages 341–343, the opinions have the schedule number attached in brackets.

"Do you consider that your congenial art specialty is appreciated in this country as an art—also as an industry?"

To the above question, the following replies were received:

[1] "I consider that in large centres art is more and more appreciated yearly. The danger now is that it will be considered as an *industry* rather than as an *art*."

[3] "Good teaching* is appreciated. My work is not as remunerative as it might be, because my class is full only from January 15th to March 15th or April 1st. To make good my outside expenses, summer teaching is necessary."

[4] "Yes."

[5] "As an art it seems to be appreciated to a certain extent, but not so substantially as could be wished. It appears to be fast becoming an industry so called, but probably statistics only can show if it be a profitable one."

[6] "Sculpture being my congenial art,† I do not consider that it is appreciated in this country."

[7] "Yes."

[8] "That landscape art is appreciated in New England is evident from the large number of persons that visit the galleries and picture stores. As an industry it is a failure, so much so that the

* This artist's specialty is teaching art, as will be seen by reference to schedule numbered 3, in the third table, page 342.

† This artist derives a living from teaching art. See schedule numbered 6, third table, page 342.

meagreness of their income will prevent a majority of those who devote themselves to this specialty from sending in the amount they receive from it. The rich invest in foreign art, and most of those who would like to encourage the home industry have not the means."

This artist, although he takes a somewhat sombre view of the condition of landscape art, is himself fairly successful, as will appear by reference to schedule numbered 8, in the table on page 341. It is well to notice, however, that although landscape work is his specialty, a considerable portion of his income is from portrait work. Contrast his opinion with those expressed in the replies numbered 1, 4, and 7, also from landscape artists, and with that numbered 10. His fear that the majority of replies received from those engaged in this specialty would not contain returns of income was groundless. Contrast, also, the average income of landscape specialists with the average income received by those engaged in other branches as shown in the analysis of the tables, page 345, *ante*.

[9] "I fear not as it should be; home subjects especially."

[10] "That landscape painting as an art is largely appreciated can be seen in the fact that a large number of landscapes by the best living foreign painters are to be found in private collections of pictures throughout the country. In many of these collections there can be also found numerous works of our best native landscape painters hanging side by side with the best foreign work of its kind. That this art is appreciated as an industry, i. e., in a mercantile way, is evinced by the great number of landscapes which are produced and sold by resident artists annually."

[11] "I do."

[12] "No. The patrons of art in this country, as a rule, are people who have acquired large fortunes during an active business life which left no time for the acquisition of knowledge concerning art, in any of its branches. Having no convictions of their own they are compelled to patronize the kind of art which, for the time being, is considered fashionable. Most art work, especially that known as industrial art work, is supplied through ignorant and unscrupulous dealers and manufacturers. That is best with them

which yields the largest percentage of profit. They impose their fiat upon the people who, in default of art training, are obliged to accept it as final."

[13] "I think that by the public at large and by many broad minded artists illustrating* is considered an art. By many prejudiced, narrow artists * * * it is considered more as an industry. The illustrators of America are the only American artists whose work has attracted favorable notice from abroad for its own native excellence. Illustration is, apart from being an art, a great industry; being the *raison d'être* for many great publishing and book houses, who have millions of dollars invested and thousands of people employed."

[14] "As an art I don't think it (sculpture) is appreciated, simply because there are so few that have any knowledge of sculpture as a fine art. We are too much bound down to the conventional idea of sculpture to appreciate it as a fine art. Our public statuary * * * is a shining example of what I mean. Our sculptors have depended on mere talent without giving themselves that preliminary study which is so necessary for great art. No country can be great in art unless great study has been put into that art."

[15] "Yes, as an art. But ignorance induces a belief that a fair price is too high a price, and patronage is therefore withheld."

[16] "Yes."

[17] "Yes, in a certain degree; that is, as far as the people are able to understand it. Almost every one enjoys pictures in a certain way, but very few are sufficiently informed to appreciate or understand the artist's work. The majority have no sympathy whatever with artists; they are amused by their pictures occasionally, that is all. It is only the few to whom the artist's work is of great importance enough to receive their encouragement and support."

[19] "Yes, as an art. Not as an industry, judging from the lack of patronage."

[21] "I think the growing taste for all matters of art is especially shown in the purchase of pictures. There is steadily in-

* For publications.

creasing interest in exhibitions and studios, and sketches as well as finished work are bought freely."

[23] "Not altogether, as landscape art requires more cultivation of the art idea and sentiment to appreciate the work. The masses always prefer portrait or *genre*. The latter possess some human interest to seize their attention. The art of designing is the most profitable, except portraiture, and frequently more profitable than portraiture even. Water color work is far less sought and appreciated here than in England and France. In England it is in the ascendancy and has been for twenty years. Interest in it is growing in this country."

[24] "Not by the masses." (Portraits and figures.)

[26] "By the general public, as an art, fortunately." (Landscape.)

[27] "By the majority not as an art, but as a business, and a poor one."

[28] "Art is not appreciated, especially home talent, mostly through ignorance of the parties themselves, or on account of the notion that anything with a foreign name must be superior, although in many cases the foreign work is not up to the American average. This is proven by the fact that foreign artists come here with letters of introduction to high social circles and are given lucrative commissions, while the public opinion was that the work executed by them would not have been regarded as worthy of amateurs in this country. Their American patrons were perfectly satisfied, however, on account of ignorance."

[29] "As an art, no. As an industry, yes; but only by artists. The public cannot judge for themselves, not being educated in the arts. The appreciation is, however, growing, and rapidly, too."

[30] "As an art it is appreciated, but as an industry not quite enough."

[31] "The value of the portrait painter and the painter of manners and customs is certainly undoubted, and he is perhaps generally appreciated at his just worth in America. My art is very congenial to me and its returns adequate to my needs, and something more. * * * I have been uniformly successful * * *

and I feel confident that I owe everything, directly or indirectly, to foreign study, foreign art and travel."

[32] "My work both here and abroad has always been appreciated, but my position as an artist differs in the two countries. Abroad I was received in high society as an equal, being treated as it is usual to treat artists of merit in Europe. Here I am a tradeswoman. I do my work, send in my bill, am paid, and there the matter ends."

[33] "From my experience I should judge that art was not appreciated either as an art or as an industry. Art is patronized here (in southeastern Massachusetts) to some extent, but not for its sake. Nearly all patrons rely upon the statements and opinions of dealers, and purchase works for the signature, of which they appear to be better judges than of the pictures."

[34] "We have every reason to believe that high minded, conscientious, and educated architects* are being more and more appreciated in this country; and we find many of our best builders and contractors are refusing to undertake work of even a simple and commonplace character without an architect is employed. Our worst enemies are ignorant or half-educated architects who impose upon an unsuspecting public and bring the whole profession into disrepute. Architects ought to be required to undergo an examination and reach a certain standard of excellence before being allowed to practice, but perhaps this is impracticable."

[35] "Appreciated to a small extent. I am obliged to delve at uncongenial work at commercial prices, instead of being employed at much higher prices as is the case in England, France, and Germany with artists of my rank of ability. As an industry it is of no account. A whole life's work, as above stated, is little better than wasted."

[36] "Yes; but only occasionally regarded in its best sense or importance."

[37] "As an art not appreciated, and, consequently, appreciated as an industry."

The following answers were also received from artists whose

* This artist's specialty is architectural designing.

schedules were not complete as to the statistics of income, expenses, etc., and are not represented, therefore, in the preceding tables relating to these subjects; the replies consequently bear no schedule number:

“Yes.” (Marine.)

“Not to as great an extent as painting.” (Sculpture.)

“I think that the interest in art and artists is growing daily, but artists with modern ideas and good understanding have to combat some very curious notions which have been promulgated by men who wished to appear as masters, who were not. * * * Amateur mediocrity is thought a great deal of in Boston.”

“Art as a profession is not appreciated in Boston as in New York. There are few sales of Boston pictures. Landscapes are not in demand. Art except in human portraiture is a beggarly business, at present quite dead.”*

“As an art, yes, to a considerable extent; but not as an industry. I mean that I consider that my best work has no merchantable value in the least degree proportioned to its merit. But there have been times when my pictures brought good prices, while they were inferior in artistic merit to what I have done since. I think this is owing in great degree to the immense competition since the times I refer to.”

The author of the last opinion has an experience of 42 years in art work. His specialty is landscape.

“Appreciation is shown by large sales in the present exhibition in New York of pictures varying in price from \$30 to \$50. Water colors are appreciated by many who cannot afford the higher prices of oil paintings. The production of water colors of subjects suitable for decoration and decoratively treated is forming more and more of an industry every year.”

“Yes. I consider the interest in art has steadily increased during the last twenty years among all classes. Each year more money is spent on art, and the standard during the last ten years has risen very much. The number of fine pictures scattered through private

* Contrast this with the almost opposite opinion expressed in the answer numbered 21.

galleries is large, that is, fine modern pictures; only a few good specimens of the work of the old masters have come out of Europe."

"No. My specialty, sculpture, is neither understood in an art sense, as it is understood by the best sculptors of Europe, nor as an industry as expressed in the unnumbered phases of skilled industry in the old world. I believe that the sensibility to feel, and the judgment to feel, what is good in every department of this subject, from the best expression of art to the best work of skilled industry, does not yet exist with us. The value of such productions is wholly unrecognized."

"By a few, yes. By the many, no."

"In Boston, yes." (Marine.)

"Not very highly as an art; fairly as an industry." (Architecture.)

"Interest in art is increasing, but among the fine arts, so called, it is foreign rather than native art that feels the benefit of this increase. Amateurs are increasing. This tends to sap the business of professionals. * * * Art schools are developing talent but not patronage. Our people are not yet independent enough to patronize what they like, but they are improving."

"It is getting more appreciated every year, both as an art and as an industry."

"As an art it (landscape work) is well appreciated. *Good* art work receives prompt, sufficient and continuous appreciation, with ready sale and fair compensation. Landscape painting should never be classed as an industry. An artisan may do fair work, but the artist can only do his choicest work as the inspiration moves him."

This last opinion may be contrasted with that expressed in the answer numbered 8. The two represent opposite extremes of opinion. The author of the last has had 15 years' experience in his profession, was educated in this country, and is a leading landscape artist.

These opinions, 46 in number, may be summarized as follows: 20 may be classed as distinctly expressing an affirmative

opinion upon the question submitted; 5 others are upon the affirmative side, but are more moderate in their views; 4 consider the condition of art to be improving; 4 believe their specialties to be appreciated as branches of *art*, but not as industries; 2 have an opinion exactly opposite to this last; and only 11 express an opinion distinctly unfavorable to the condition of art.

“What would you recommend to awaken a deeper interest in the fine arts in America, and to secure a higher artistic standard and a better financial return?”

In answer to the second question, the following replies are presented:

[1] “Free fine art galleries and the abolishment of the tariff on foreign art work.”

[3] “What is needed is, on the part of the wealthy classes, more knowledge and better appreciation of art. Also, on the part of the art dealers more interest in the works of local artists. Dealers prefer to sell high priced pictures to spending any effort on the less pretentious work of home talent.”

[4] “Drawing to be taught in all public schools by competent teachers. Free evening drawing classes. Exhibitions of works of art throughout the country. Industrial schools of art, free or otherwise, where the true principles of art are taught to be applied to mechanical productions.”

[5] “By the government and nation, a generous acknowledgment of, and willingness to follow, the example set by other nations in encouraging art by large national exhibitions and purchases; by educational prizes and competitions, and by all and every means adapted to elevate the people and lead them to appreciate the fact that art is an intellectual product.”

[6] “Educate children to *see*, and then to draw what they see, in even a rough, uncouth way it may be. Teach them to see and love everything beautiful in nature.”

[8] “Good instruction which would eventually teach the rich that it requires something more than a reputation to make a good picture, and educate the public generally to such a point that it will recognize a work of art at sight.”

[9] "More encouragement from the government. The application of art to industry. Public collections, and good instruction in the schools."

[10] "First of all we must foster and develop our industrial training and drawing schools in all parts of the State, and compel, if possible, the opening of the latter in all those towns and cities where they do not at present exist and where they should exist to comply with statute law. If these schools are properly cared for and sustained the results achieved by them will undoubtedly be a broader and better development of fine art work, for the reason that it will be based upon a sure and solid foundation."

[11] "Better art schools. Drawing in the public schools."

[12] "I think a more general study of the history and literature of art in the public schools is first necessary. This will awaken an interest in the fine arts which will impel us to serious and appreciative study of works of art. Indifference to the study of art begets superficiality at a later period, when it is too late to acquire the solid information which might have been obtained by properly directed effort. Elevate the masses by making them familiar with what is good, and a demand for good work will be created. The best art, when the masses are able to appreciate it, will secure the best financial return."

[13] "Art should be fostered by the State. The selection of designs for public buildings, etc., should be removed from political influence or ignorance. The main thing, however, is that we should educate our artists. I do not know how to secure a better financial return for the arts, but without it the arts will not flourish."

This artist further recommends abolishing the duty on foreign works of art and placing museums in control of artists, as steps towards securing better educational facilities for those intending to pursue the art life.

[14] "Art should not be measured by a financial standard. We are a practical people, and unfortunately art with us is made a mere commodity, and thereby its very aim is defeated. If we had a higher artistic standard, the financial return would necessarily be greater."

[15] "Intelligent patronage on the part of town, city, state, and national governments, and wealthy clubs and societies. The sight of good pictures, well selected, which have been paid for out of money contributed by the beholders, will create an interest in the work, and lead to the proper appreciation of the artist as a producer."

[16] "The combining of educated persons in societies or otherwise to influence the construction of public works that they may conform to and beautify the landscape, and so influence the taste of the young. * * * Some means should be devised of securing men of capacity and responsibility on committees having charge of the selection of works of art for public places, that only the best may be put on view. Encouragement of works of art."

[17] "The education of the people."

[18] "Removal of the duty on foreign works of art."

[19] "Art follows wealth. When times are dull art suffers. True art should not suffer and be affected by commerce and its ever fluctuating conditions. The artist earns scarce enough to live on. He is obliged to invent and create. This takes more time than other pursuits, and the results, even if successful, are far below the financial standard of other workers. I believe art should be encouraged by the State."

[21] "Better art schools and free art collections."

[22] "The State should encourage art as is done in European countries; for instance, the purchase of pictures yearly to be placed in public buildings or museums. Thus there would be encouragement for original and serious art work. At present the artist must endeavor to please the public taste in order to sell his work. This has a bad effect on really honest and artistic work."

[23] "First of all, loyalty to American artists and their work. Great prices are often foolishly paid for foreign work. People should visit the studios and learn something from unprejudiced artists (if there are any)."

This artist also complains that dealers charge an excessive commission on the sale of water colors, thus preventing the

public exhibition of such works, artists preferring to sell them from their studios.

[26] "If the tariff on foreign works of art were abolished good works of foreign masters might be introduced here at first cost, it being necessary for students to have such work to copy from and compare their own work with, as there is no original American school of art. All taxes on works of art should be abolished, as although the purchaser of a work of art owns it in a proprietary sense, yet in another sense it is as much the property of any persons he permits to see it. It seems strange for one to have bought a picture from an artist 200 years ago, and for the latter to have been paid once, and the State three times for it."

[27] This reply is similar in character to that numbered 22.

[28] This reply complains of incompetent art critics, and advocates more thorough art knowledge on their part.

[29] This reply advocates government patronage of art.

[30] Better educational facilities and government patronage are suggested by this artist.

[31] This reply is similar to that numbered 22. The author, in support of his argument, says: "As yet in America the artist is undervalued as a producer of wealth. It was computed that Corot, the French landscape painter, produced more than fifteen million francs (\$3,000,000) of real value to France. Quite as valuable a life to the State as the average farmer, I should say! * * * The first lesson for our people to learn is to respect the artist as they do the physician or lawyer, and give him a voice in the management of matters pertaining to his profession. In foreign countries an artist's work is judged by his peers and co-workers; in America he is judged by a legislature, a common council, or other body, or by citizens who have generally little knowledge, but plenty of conceit."

[32] "The better education of the people. There is little æsthetic cultivation in this country. * * * Everything is taught with a view to making money. The money maker and the artist are antagonistic. * * * The protective duty on art works ought to be removed."

[33] This reply advocates less expensive art schools, public

museums of art, more intelligent criticism, and the discouragement of *auktion* painters and mere commercial painters.

[34] This reply advocates government patronage in the form of competitions for the designs of public buildings, the programme for the competition being so arranged as to attract the best talent, and judgment to be rendered impartially by a professional jury.

[35] This reply advocates the establishment of schools of figure drawing from the life, upon the plan pursued abroad.

In addition to the opinions already given, we present the following from artists concerning whom no statistics respecting income, expenses, etc., appear in the tables on pages 341-343, and, for that reason, bear no schedule number.

“The better education of the people, and a higher art standard.”

“Purchasers who have love for art and means to buy art works should patronize home talent instead of foreign artists.” This reply also advocates a higher education and more intelligent criticism.

“An older civilization.”

“The abolition of the tariff on foreign works of art, and the establishment of thoroughly equipped State schools.”

Another reply advocates government patronage as suggested in the answer numbered 22. Still another is unique among the replies received in that it advocates a tariff on imported works of art and art industry except those imported by governments for schools, institutions, buildings, and public squares.

“Above all things we want a society to discourage young men from choosing art for a support.” This reply advocates patronage of native rather than foreign artists.

“I would recommend a more frequent and general visiting to the studios of artists by amateurs, who should take pains to introduce the works of the artists to wealthy purchasers, and to the art-loving public. * * * In fine the artistic education of the people, especially the wealthy, would more than anything else tend to the

best encouragement of the artist and the elevation of the standard of art."

"Founding a regular system of art education, for instance, like that adopted by the French government."

"It is only by superior art work that a deeper interest can be awakened. The artist must lead the way. He must produce work worthy of the highest praise before he has any right to ask or expect it. An artist had better paint only one picture a year, and have that a gem, than paint a hundred poor ones."

Three replies advocate abolition of the tariff on foreign works of art, government patronage of art by the endowment of technical schools, the establishment of free scholarships for foreign travel and study, and, generally, improving the culture of the people. Several others place chief importance upon the need of more thorough education of the masses in respect to art. Most of these regard the establishment of free museums and galleries of art as important adjuncts to this end. One artist deplores the commercial spirit of the present day as fatal to art progress and expresses opinions similar to those contained in the answer numbered 32.

A leading artist replies :

"Art can only be supported by the taste and sentiment of the people. If they require art products these will be produced of a quantity to suit the demand. The present art revival which has overrun the world, and which has been largely supported by American money, will probably create in time a popular demand for native works of art as articles of decoration.* Legislation cannot hurry this result. * * * Free national exhibitions of works of art might perhaps help matters in this country by educating the people at large, and thus increasing the demand in some new directions. We are now suffering from the want of education in the rich and governing classes. To educate them it is too late, but we might possibly educate those who are about to take their place. There are already in this country great numbers of art schools, respectably instructed and constantly increasing. The most that they have accomplished is to prepare pupils for foreign instruction, a prepara-

*As will be seen by reference to what is presented further on in this Part such a demand already exists.

tion which has so far proved inferior to that which foreigners get in their own country. I have no reason from my recollection of American legislation to hope that national schools would be of any better quality or produce any better result. Art, if let alone, will be produced like other things, wherever it grows best. If the nation wishes to do a practical good turn to artists let it take off the duty on artists' materials, which would not only decrease our very great expenses, but, what is of far more consequence, would improve the quality of the materials made in this country."

Another, one of our older artists, writes :

"A promise of practical and enduring interest in art seems to lie in our manufacturing interests. As one co-operates with the other the interest in art will increase among the producers and consumers of manufactured goods. As manufacturing business cannot subsist on whims, the artist will expect to receive and return considerate treatment. The only prize which can rise above puerility of sentiment will be the legitimate demand for his work. If he desires to execute great ideas of his own he must so increase the value of his regular work as to furnish himself with the means for such a performance. He can find time for this without sacrificing his 'business' interests, and such large efforts will react beneficially on his practical labors, by increasing his readiness of invention, his critical acumen, and by enriching his conception and execution. It seems to me that through the manufacturing interests the talent developed by the art schools can be utilized in production, and the taste for art developed in these schools can be utilized in the consumption of æsthetic work."

We close this presentation of replies by the following from an artist of established reputation, who does not believe the present art schools are up to the required standard. He says :

"Schools should be immediately established where drawing, painting, and modelling shall be taught by the very best teachers that money and love for human beings can obtain. This in preference to all and anything else, because there is nothing so vitalizing in a community as human beings who can produce something, and who are developing to that end. Unless something better than what exists is soon done New England will be left in the rear in what more than anything else she ought to be first, namely, in art and in all skilled industries."

This artist mentions two things which interfere with progress, namely, the idea that museums are the first need in art instruction, and ignorance of the fact that 98 per cent of those who become good artists and skilled workmen come from the poorer classes, and need free and excellent instruction. He is quite radical in his unfavorable opinion of the present art schools.

These replies do not require extended analysis. They indicate a quite general opinion that our present art standard is too low, and that by some means artists and the public should be educated to a deeper appreciation of art. Most of the plans suggested involve government support of art schools, and public museums and galleries of art. Others distinctly advocate government patronage of artists by the purchase of their works after the foreign practice. Many especially consider a tariff upon foreign art work to be detrimental to progress in art, by preventing free importation of superior work from abroad.

The last reply but one recognizes the relation which should exist between artists and our industries. Leaving the consideration of our subject from the standpoint of the professional artist we now pass to its second division, that of applied art. Under this head we shall describe what has already been done in certain industries towards the introduction of the art element.

APPLIED ART.

Within the last ten years a great revival has taken place in the application of art in industry. This has led certain manufacturers to devote much attention to design and color in their products, and the art value of an article is now considered an essential element in its manufacture. One has only to look about him to see evidences of this on every hand.

In the leading classes of goods made in Massachusetts considerable advance has already been made. In the production of fire-arms, for instance, great care is taken to secure beauty of form, as well as excellence of workmanship, and, by careful manipulation in the polishing and finishing shops, the modern revolver or rifle is made attractive to the eye, and worthy to rank as a specimen of art manufacture. In artisans' tools, also, the same elements enter into the best product. An im-

HALL LANTERN.



plement made handsome in this way commands a readier sale than one equally serviceable but more clumsy and crude in appearance.

In boots and shoes the taste of the present is more practical than formerly, and while modern shoes do not rival in elegance those of certain periods in the past, yet the conditions of utility and durability having been met manufacturers now appreciate beauty of form, and such ornamentation as may be produced by artistic stitching.

In the manufacture of paper boxes the advance is marked. The use of ornamental boxes has taken a wide range, and the decorative appearance of such wrappers is found to be an important aid to the sale of the goods contained therein. Chromo-lithography and the various reproductive processes, hereafter to be noticed, have placed within the reach of the makers of these boxes means of cheaply and artistically ornamenting their work, which have been widely employed.

In building great improvement has been made with respect to the architectural character of the structures erected. Work of any magnitude is seldom undertaken without the employment of a skilled architect, and the money value of design in building, finding its immediate return in more certain and remunerative rents, and in the increased value given to adjacent property, is coming to be generally recognized. In the industries subsidiary to building, such as the manufacture of interior decorations, paper hangings, tiles, and hardware, the crude and inartistic work produced ten years ago would find no sale today. In household fittings and decorations the tasteless designs and inharmonious coloring common in the past is rapidly giving way to better work more acceptable to a cultivated taste.

Even in burial cases, caskets, etc., a comparison of the product of the present with that of the past indicates that art may do much to remove the sombre appearance of these necessary but formerly unattractive articles.

In buttons and trimmings it is now usual to attend carefully to the matter of design, and a great variety of new and beautiful patterns is annually produced.

In carpets our manufacturers employ trained designers, and all leading factories use special patterns secured by letters

patent. In the character of the ornament used and the colors employed, the designs now executed are much beyond those of the past, and manufacturers of these goods are apparently alive to the importance of further progress. Massachusetts schools of design are successfully supplying the demand for native designers of carpets.

In glass work art has improved the form and quality of our native products, and in the manufacture of glassware has introduced beautiful surface decoration and the use of color. The introduction of stained and colored glass in every department of building has within ten years practically brought a new and thriving industry to Massachusetts.

The manufacture of ivory, bone, and horn goods and the extended use of celluloid, or artificial ivory, has afforded a good opportunity for decoration. In jewelry burnishing and lapidary work, likewise, artistic progress is apparent. In machines and machinery the field is more circumscribed, but even here, in the way of surface decoration applied to certain parts of the structure, opportunity is presented for tasteful work.

In the manufacture of musical instruments and materials art is chiefly apparent in form and in surface ornamentation. In piano and organ cases greater variety is now shown than formerly, and in the best class of instruments design is now carefully studied, and trained designers employed.

In cooking, lighting, and heating apparatus, as in all departments of household furnishings, the influence of artistic taste is apparent. Cooking and heating stoves are now produced by Massachusetts manufacturers that display exceedingly artistic treatment in the character of the ornament used upon them and in the form given them. In gas fixtures and lamps, also, the artistic as well as the useful is demanded, and our manufacturers are meeting this demand by the production of new and beautiful designs.

In textiles the character of the design to be woven, and the colors used in dyeing and printing, determine the artistic value of the product; and while the field is unlimited the public demands goods of a higher artistic quality than formerly. It is for our manufacturers to determine whether the factories of Massachusetts shall lead or follow in this matter, and whether

what has so far been accomplished here shall serve as an inspiration to still greater progress in the future.

In earthenware and pottery, since the æsthetic feeling has been developed in America, our leading makers have felt a demand for the best goods, and have originated many designs and brought out reproductions of antique wares for decorative purposes to meet this demand.

In furniture art has made itself felt in improved construction, purer design, and in the application of carved ornamentation. Formerly the best designs executed here were reproductions of foreign work, while a great deal of the furniture produced was conspicuous for the entire lack of design exhibited in its construction. But today leading manufacturers secure original designs, and employ carvers who model their work with great skill.

In the manufacture of perfumes and toilet preparations, the artistic revival has revolutionized the method of putting up the goods. Ornamental and tasteful wrappers, frequently of elaborate design, have superseded the plain and generally unattractive wrappers formerly used.

In photographic work much more attention is given by the operator to artistic pose than in the past, while in general finish the photograph of today is immeasurably in advance of those formerly produced.

Printing and publishing and allied industries have also felt the impetus of the æsthetic revival. This department of our industries is a broad one, and we can only allude to the general fact, without enumerating the various ways in which the art impulse has been manifested. We shall further on present detailed statements relating to improvements in reproductive engraving processes, steel and wood engraving, etc.

Mere mention must at present suffice of the class of metals and metallic goods, certain departments of which, namely, brass and bronze goods, silverware, wrought and cast iron, and zinc art work, we shall also present in some detail.

In stone carving, especially in connection with building and monumental work, the influence of improved taste on the part of designers, and greater facility on the part of workmen is especially seen. Woollen and worsted goods have shared with

other textiles in the improvement that has been made in design and color.

This brief review of the leading classes of goods made in Massachusetts will serve to indicate the broad field that art may occupy when applied in industry. It shows also that in nearly every industry the art impulse has already been felt.

To secure direct information upon this point the Bureau has obtained schedules from 41 manufacturers covering the following specified industries: Glass (glassware and colored glass); interior decorations; leather (harnesses and saddlery); metals and metallic goods (cast and wrought iron, bronze, brass, zinc, white metal, and silverware); paper hangings; plaster casts; pottery; printing and publishing (art books, decorative cards, monotypes, photographs, Albertypes, photo-etchings, lithographs, heliotypes, phototypes and photo-engravings, steel engravings, wood engravings); terra cotta; tiles; and wood carving.

We present in succession the replies to the questions contained in the schedule. In quoting the replies in detail we have preceded each quotation by its schedule number in brackets, and if the reader desires to compare the replies of any particular manufacturer to the different questions, the connection may be traced by means of these schedule numbers. The questions are printed in italics.

Are you the inventor or do you originate any part of your products?

Thirty-six reply yes; 5 answer no. The five who reply in the negative have made many improvements in the processes they employ. They are, too, in a sense, originators of their product. For instance, one is a skilled engraver who reproduces paintings and drawings made by others. The result is an original art product, namely, a steel engraving, but not original so far as relates to the conception embodied in the painting or drawing copied. Another is a worker in terra cotta, creating in concrete form the original designs of others. Among the replies are the following:

[1] "All we make is original. We employ special designs and watch the foreign production." (Glass.)

[6] "I originate my patterns. The ideas I put in them are new in every part both as regards use and artistic adornment. I have patented my works." (Art stoves.)

[7] "We were the first to model our stoves from a plaster cast." (Art stoves.)

[13] "All of our own manufacture is original. In our ware-rooms we show a little foreign work. It does not compare favorably with our designs." (Brass art goods.)

[14] "I adapt certain imported ideas and originate new combinations; am always trying to get up some new thing." (Brass and metal art goods.)

[36] "I am the inventor of my work, though I have never patented any of my processes. I claim to be the first to use the new style of decorative work in steel engraving, and my departure from the old styles was occasioned by observing the visiting cards used by the Japanese ambassador and suite. These were unique in a decorative sense, being unconventional, distinctly original, unmechanical, and beautiful in form and line. The cards gave me new ideas, and I immediately began the study of Japanese art and after a time succeeded in producing by engraving something entirely new to the American or any other market." (Steel engraving.)

[40] "The tiles of our manufacture differ from all others in the manner of their ornamentation, which consists in making the design in relief, and glazing the whole in a single tone of color which shall be neutral, rather than positive, in its effect. Previous to this discovery tiles were almost universally made with a smooth surface, and were variously known as unglazed, glazed, printed, painted, encaustic and embossed, the latter being decorated with staniferous glazes." (Tiles.)

How long were you engaged in your work before reaching successful results?

Twenty-one report themselves as successful at once; 1 labored ten years out of the 35 during which he has been established before becoming successful; 3 were engaged four years; 2 were engaged five years; 1, two years, while 13 do not definitely state the time. The replies, in certain instances, follow;

[6] "For 35 years I have labored in the direction of my present business. I have been successful for 25 years at least. I have studied botany and learned to note how things in nature are constructed and have been helped by my observations." (Art stoves.)

[7] "The demand for new things is so great that we cannot keep pace with it, for it is our aim to produce only artistic and beautiful results. We have been successful ever since we made art goods some five years since." (Art stoves)

[10] "This house started 40 years ago, but it is only of late that we have made wrought iron (art) goods. In this line there has been a complete revolution, or, I should say, a new market made." (Wrought iron art goods.)

[11] "In this particular line we began about three years ago, and success became almost immediate. We cannot fill our orders. The demand for good work is very great because there is so little good work done. We employ one smith of life long training and artistic nature, and four first-class light-work blacksmiths." (Wrought iron art goods.)

[13] "Within ten years we have done better than the thirty years previous." (Brass art goods.)

[14] "I find a very ready market for my wares" (Brass and metal art goods.)

[21] "The demand for my work has grown steadily for ten years." (Plaster casts)

[25] "Each has required not less than five years before affording any profit." (Publications, art books, etc.)

[31] "Our business was small ten years ago, but it has grown very large. Lithography has taken the place of poor wood engraving, and our success arises from this fact coupled with the demand for artistic work." (Lithography.)

[36] "In a business way I had to work hard and made fair progress in the old way of methodical ruling and etching. When I adapted the Japanese idea and introduced the ruling machine my first productions gained great celebrity. In Europe my cards were eagerly sought. * * * The designs and decorative work con-

sisted either of a blending of several pictured subjects from nature or of different subjects in each corner of a card with a border of an odd design. Since these cards have had their day I have taken landscapes, figures and marine subjects, all from drawings by the best known American artists, and reduced them in size for my engraving, often taking several scenes and reproducing them in a group." (Steel engraving.)

[40] "About four years of costly experimenting were necessary before such a degree of perfection was reached as would warrant their being entered in the market for sale." (Tiles.)

[41] "For the past two years we have been producing new and highly artistic carvings, and have been successful." (Wood carving.)

What is the market for your productions ?

Sixteen replies indicate the United States ; 5, home and foreign markets ; 3, the United States and Canada ; 6, local markets ; 3, New England ; 3, the world ; 5, market not definitely stated.

The following replies indicate the class of patrons who purchase the particular goods noted :

[6] "All classes. It is just as well to have a good looking stove, as it is to have a good looking picture or any piece of furniture in the house. My products find a market all over the country." (Art stoves.)

[10] "Educated people, and this includes wealthy and artistic people, poor or otherwise." (Wrought iron art goods.)

[11] "Mostly educated people or those conversant with artistic things." (Wrought iron art goods.)

[14] "Composition metal is cheap and the demand good. A tin teapot which is made artistically, and has the appearance of hammered silver, can be sold for 50 cents. It is just as useful as if made of silver, and has the merit of being beautiful to the eye. All classes can buy them." (Brass and metal art goods.)

[21] "I make reproductions of the antique and these are sold to art people for decoration and study." (Plaster casts.)

[26] "We have sent our work to Europe with good results."
(Decorative cards.)

[40] "Our market is, at present, confined almost exclusively to the United States, owing to the fact that it has been impossible to multiply the facilities for manufacture rapidly enough to keep pace with the increasing demand at home." (Tiles.)

Do your productions compete with and decrease foreign imports?

Twenty-six reply yes; 15 reply no. Some of the replies were:

[2] "Cathedral glass is imported and we cannot yet equal it here. Ultimately, when capital is invested, we can accomplish good work." (Colored glass.)

[3] "In draperies we use little that is American because we can import better stuffs and cheaper than we can produce." (Interior decorations.)

[5] "There is little or none imported." (Art iron casting)

[8] "We produce ornamental work that is cheaper and just as good as much European bronze or brass work. These pieces of electroplated iron answer as well for decoration and beauty to the eye as the imported." (Art iron casting)

[10] "We make as good work as can be produced in the world. We can make and sell at profit for what it costs for the bare importation of foreign work." (Wrought iron art goods.)

[11] "We have foreign iron work in our store but it does not sell beside our work, is not so good, and is higher priced. In design and finish it does not compare with our productions. The Belgians find a poor market in America for their wares in iron. The antique iron, of course, is rare, and, on account of its antiquity and fine workmanship, it demands good prices." (Wrought iron art goods.)

[13] "We do not import one-twentieth as much as we did five years ago. We will except large vases, urns, and the like. These we will soon make as well, and sell at lower prices than imported goods." (Brass art goods.)

[14] "We adapt ideas from foreign makers. We have the skill to duplicate like the Japanese, but it costs too much to get up new designs. Our people have a strange notion of making a fine thing in small ware, and demanding a big price. This is wrong. Foreigners make a good thing and put it at a low price to sell all they can of that one object, and they make it a success. We are beginning to do that. Take, for instance, a plaque clock made from an original design and sold for \$5.00. It is as good as French work, and is all American, except the figures (on the dial), which are French." (Brass and metal art goods.)

[20] "American machine-made hangings are far ahead of foreign. We do not make so good handwork from blocks as the Germans or English, because we have not the world as a market. It is only a matter of time when we will compete in the highest grades." (Paper hangings.)

[21] "In Paris, Berlin, and London there are many producers, but we do as good work and sell as cheap, all things considered." (Plaster casts.)

[31] "We send our can labels, theatre bills, and the like, to Europe in large quantities. Protective tariff off, we could compete with foreign imports. * * * We can compete with any house in the world." (Lithography.)

[34] "Two-thirds of our work is exported." (Steel engraving.)

[36] "English and French as well as German engravers have a good market in this country, for good work is appreciated here. They send us reproductions of the works of the best artists in Europe. Our bank note companies employ the best engravers to be found, indeed they have all there are in America with a few exceptions. These exceptions are doing the best steel engraving that has been done of late years. In the decorative lines we keep the foreign engraver at bay, for our inventive qualities are of a higher grade than those of the foreigner. It is the same in chromo-lithography; we excel all others, and so have no competition. It is often the case that foreign governments employ our bank note engravers to do their work; indeed, our companies make most of the postage stamps made in the world, supplying all nations." (Steel engraving.)

[40] "Inasmuch as these tiles are acknowledged to be the finest,

artistically, produced in the world, they can hardly be said to compete with foreign productions; it seems fair to assume that they have, to a large extent, popularized the use of tiles and made their consumption much more general, and, in that way, to have stimulated rather than decreased the importation of foreign tiles, while their success has induced the establishment of a number of factories in this country." (Tiles.)

How far reaching are your productions as regards the poor?

Thirty-three reply that their productions are within reach of the poor, while 8 reply otherwise. A part of the replies are appended:

[5] "We make many things that take the place of brass and other metals; being cheaper the poor can and do buy them." (Art iron casting.)

[6] "The tiles used in our stoves make them a little more costly, not much though. A clerk on \$800 a year can afford one of our best stoves." (Art stoves.)

[10] "Our goods cost little, if any, more than the poor stuff in the market, and are artistic. We have many things that ordinary people can buy." (Wrought iron art goods.)

[14] "We make objects very beautiful that sell for 50 cents. * * * The poor have artistic taste and I am not sure but our largest trade is from the ordinary people." (Brass and metal art goods.)

[17] "Our goods are not costly, and being serviceable and artistic those who are able to keep house decently can have our wares." (White metal and britannia goods.)

[28] "We can give the poorest who are inclined to artistic sentiment anything they want at low price. Etchings that cost \$100 we can reproduce in photographic form for 15 cents." (Art photographs.)

[29] "We have a list of many hundred works that can be sold and framed for one dollar. Works of the greatest artists are thus brought within reach of the poor." (Photo-reproductive processes.)

[34] "Our calendars are greeted with pleasure by the poor. We made these first about five years ago, and a few thousand were printed. Now the demand for one style reaches about 50,000. The poor share with the rich in these works." (Steel engraving.)

[40] "Tiles of any description can hardly come within the wants of the very poor, being, in a sense, articles of luxurious utility rather than of necessity; yet many of those whose circumstances are far from being prosperous possess one or two tiles of picturesque design, as bits of decoration for the wall or mantel, while others use tiles with sufficiently smooth surface on which to set a teapot or hot dish, thus adding a little color to their otherwise plainly furnished table, making the meal time a little more pleasant and cheerful." (Tiles.)

In what way have your products changed the artistic sentiment of the people?

Thirty-nine consider that through their products they have educated the artistic sentiment of the people, while two do not think they have materially affected the artistic sentiment of the people. The chief replies were:

[5] "By reproducing the fine foreign objects that cannot be bought for 100 per cent more than we charge." (Art iron casting.)

[7] "Educated the middle classes more than books. The poor prefer an artistic and beautiful stove to a second hand one. It is the stove and window laces that furnish their rooms. They are quick to perceive good finish in our wares." (Art stoves.)

[9] "In reproducing the best German and English, as well as other foreign goods, modern and antique, we are able to educate the people to a knowledge of the arts. We make a great deal of original iron work." (Art iron casting.)

[10] "Older class of goods, say eight or ten years ago, outgrown. They are not recognized by artistic people. Great changes have taken place. Better goods of artistic design are sold cheaper, and people want the newest. Good and artistic designs are superseding the cumbersome and ungainly work of a few years past. The best designs educate and change the sentiment of the people." (Wrought iron art goods.)

[11] "Our products have revived a desire for original work.

Machine-made work is all good enough for use, but the love of the beautiful and ornamental has awakened an interest in our productions. Then, too, our wares being made of Norway iron are really cheaper in the end, as they are indestructible. The American people have grown æsthetic enough within the past 20 years to believe that the useful can be just as well beautiful." (Wrought iron art goods.)

[12] "By reproducing the French and German repoussé work we have brought the well-known metal works within range of the people. Following this we give them new things." (Bronze art goods.)

[13] "The people keep pace with our designers and demand new work. We make better goods, unique articles, all artistic, and the people prefer the highly decorated at the same cost as the ordinary work of years past." (Brass art goods.)

[14] "We exhibit in our windows an attractive array of wares. People pass and see them. After a time they call and price things, find them cheap and buy. We thus educate people to the sense of the beautiful, and old things of no beauty of form or decoration are done away with, new and artistic things taking their place." (Brass and metal art goods.)

[15] "Since the Centennial there has been a constant change and advancement in our wares. The designer is constantly improving his forms with an eye to the beauty of the objects." (Brass art goods.)

[18] "Our products tend to create a sentiment and demand for artistic articles, not only in the line of ornamental pieces but for articles of daily use." (Silverware.)

[20] "Our products have improved since the Exposition in 1876. Everything runs to high art in color and design. The people have grown in taste and discrimination." (Paper hangings.)

[21] "Our products have given the people fine reproductions of originals of life and antique objects at reasonable prices, and have thus developed a demand for new creations. Thirty years ago an antique reproduction had no sale in this country. We rarely imported. 'Images,' so called, were peddled out, but were of poor make. Now, the image man is rarely seen. Our writers in maga-

zines on art have done much to create a demand for good work.” (Plaster casts.)

[23] “In the matter of color, I make a fine grade, rich and warm. These displace the ordinary, and are as cheap. In form, too, we have educated the public taste above the grotesque art of our fathers.” (Pottery.)

[26] “Being decorative and attractive to the eye our products have attracted patrons who formerly employed cheap printing and poor lithography. Combining water-color paintings of flowers and other objects on silk and satin, and decorating these with fringe, draws attention and encourages home imitation.” (Decorative cards.)

[31] “Our products have changed the artistic sentiment of the people by drawing their attention to color and form. Fine illustrations are produced in which many life incidents are pictured showing good drawing, together with ideal or fancy designs. Things we publish to-day would sell (if common cards) for 20 or 30 cents each fifteen years ago. Now, the urchin can have an album full of them in great variety. Rooms are decorated with them.” (Lithography.)

[32] “By our process the best examples of art are brought within the reach of the people.” (Photo-reproductive processes.)

[36] “We have become educators, reproducing the best attainable works, and have prepared people to know good things in other processes when they see them. We have helped people to understand black and white in art. I believe the works we have produced have exerted an influence with the public so that * * * they expect something higher than the old methods gave them. We pay thousands of dollars every year for new designs, and try to keep ahead of the demand for new things. We have gone completely away from the old style of bank note engraving. That style of treating steel, though highly finished, is mechanical, that is, not delicate in light and shade, nor does it permit artistic and original effects. An essential aim in that process is to guard against counterfeiting, and the minutest details are essential. This results in something machine-made, cold and rigid, like the metal itself.” (Steel engraving.)

[40] “The ambition and aim, from the very inception of our business, has been to make each tile a work of art in its way, with design

and color so true and pure, that it shall be recognized as such for all time ; under no circumstances to pander to any freak of fancy, or the evanescent demands of so-called fashion. There are abundant evidences in almost every branch of manufactured household decoration, that the result of these efforts has largely influenced designers and artisans throughout the country. Especially is this noticeable where the decorations are in relief or intaglio, as, for instance, among wood carvers, terra cotta workers, in the manufacture of cast-iron heating stoves, the production of papier maché ornaments, etc." (Tiles.)

To what societies or associations, of an art nature, do you belong?

Twenty-three belong to no societies ; 10 belong to the Boston Art Club ; 3 to the Society of Arts, Boston ; 2 to societies not designated ; 1 to the Paint and Clay Club, Art Club, and the Society of Engravers ; 1 to the Paint and Clay and Art Club ; and 1 to the Boston Art Club, the Archæological Institute, the Association for the Advancement of Science, and the Bostonian Society.

Can important works of art be produced by your method?

Thirty-five reply yes ; 1 has no distinctive "method" ; 1 never attempted anything elaborate ; 4 make indefinite replies. A few of the replies are given, as follows :

[5] "Yes. St. Gaudens, Olin Warner, and other sculptors model portraits in bas relief, and we reproduce." (Art iron casting.)

[7] "Certainly. We model in clay, get a plaster cast, and thus obtain as fine a work of art as bronze can produce. The design is modelled by a sculptor the same as a bust." (Art stoves)

[10] "Yes. Take andirons of wrought iron, for example. They are not copies but are creations from the mind of our designer. There never were more artistic products of art in iron produced." (Wrought iron art goods.)

[14] "We are constantly producing elegant work. In large pieces we are not able to compete with European makers because of the great cost of dies. We have the designing skill, and must ultimately make important art works. In ten years we shall not be obliged to import one-tenth we do now. The people are becoming

educated and we can produce just as cheap." (Brass and metal art goods.)

[23] "There is as much art in pottery as in sculpture as far as modelling goes. It is created and fashioned by hand." (Pottery.)

[33] "By black and white reproductions we often represent the action in an artist's picture better than his painting." (Photo-reproductive processes.)

[38] "They can. Witness the frieze of the new pension building at Washington; also, the frieze with some 300 life-size figures on the soldiers' monument at Hartford, Connecticut, and the figures on the top of same." (Terra cotta.)

[40] "The well known plastic sketches are examples. * * * There is hardly a limit to the importance these tiles may be made to assume in mural decoration. While they would in no wise resemble the tesseral frescoes found in ancient churches and cathedrals abroad, their importance would be equivalent, though differing totally in effect." (Tiles.)

[41] "Sculptors in wood have and do produce some remarkable art works. In churches and private houses we have placed some very important carvings." (Wood carving.)

Can your style of work be produced cheaper and better abroad?

Twenty-two reply no; 6 answer yes; 8 say "cheaper, but not better;" 5 reply "in some grades, yes; in others, no." We quote twelve of the replies, as follows:

[7] "We are far above all foreign producers. In fact, they are using our styles of thirty years ago. The poorest in our country have better stoves than the wealthy Englishman." (Art stoves.)

[13] "The French make their brass goods too thin, the English too clumsy and bungling. We step in between, and make a solid article." (Brass art goods.)

[14] "We can produce here just as cheap, have as much skill, and good facilities. The duty is 45 per cent, and we can, thus protected, undersell foreign goods. Even on equal footing we can sell lower.

We cannot do large work as well as it is done abroad because we are afraid it won't pay. But it will in time." (Brass and metal art goods.)

[20] "In machine-made goods we excel. Handwork is made better and cheaper abroad. We make fine handwork but in design it is mostly copied from foreign work." (Paper hangings.)

[21] "Cheaper, yes, not better. The packing, duties, freights, and breakage bring the imported article up to a higher price than our wares." (Plaster casts.)

[25] "We do not think our style of work can be produced better abroad than at home. It can be produced cheaper." (Publications, art books, etc.)

[28] "In Italy, yes, but nowhere else. They do but little there." (Art photographs.)

[31] "Certain styles better here than abroad. In large chromolithography Germany is the leader, though we can do some fine things. Small work we can produce cheaper and better than in Europe." (Lithography.)

[35] "No. Though to qualify, I will say that we do not produce so important works as come from Europe. We are beginning the use of large plates, and some have been published with great success. After a little time, America will supply the demand, and foreign imports will decrease. Good work is what is wanted by American patrons, and they will buy American as quickly as foreign work." (Steel engraving.)

[36] "Publishers have the matter in their own hands. The best artists abroad furnish engravers with their works. This is being done to some extent here, and with favorable results. Our artists are just awaking to the appreciation of steel engraving as a reproductive process. The name of the artist and engraver being affixed to a good work alike celebrates the two arts. The work cannot be done cheaper nor better abroad." (Steel engraving.)

[37] "Newspapers are better illustrated by line engraving in Europe. All large work is done better abroad. In tone and texture in small wood engraving we are far ahead of European workers. Wages are less in England. Young men have better education and



Dana Estes

surroundings for the execution of line work abroad than here.” (Wood engraving.)

[40] “It would seem the extreme of egotism to say that it would be an impossibility to make equally artistic tiles abroad, yet the fact is incontrovertible that up to the present time none have been produced of equal artistic merit. * * * The coarser parts of the routine work could be done at less expense abroad.” (Tiles.)

Can your productions successfully compete with foreign productions of the same grade?

Twenty-seven reply yes; other replies are classed as follows: 1, yes, with present tariff; 1, no, on account of cheaper labor abroad; 2, some grades, yes; others, no; 10 did not reply. Some of the replies in detail are as follows:

[2] “We make a glass that may be termed ‘second’. This we can produce in quality and evenness equal to the foreign.” (Colored glass.)

[4] “Yes, in workmanship and quality, but not in price by 20 or 30 per cent. Give us a protective tariff and we have no competition.” (Leather harnesses and saddlery.)

[17] “English and German styles are bungling and grotesque. A few French designs are in our market. We sell to the world. Exports are 90 per cent in advance of imports.” (White metal and britannia goods.)

[18] “The variety and superiority of our styles and the quality of our goods enable us to compete successfully in home markets, and to a limited extent in foreign markets.” (Silverware.)

[23] “Yes, if I admit that foreign products are as good as mine. Not being so, I don’t compete with them. My ware similar to Leeds ware is vastly superior, and recognized as being so by connoisseurs. Had I capital I could extend my business, and find patronage accordingly.” (Pottery.)

[25] “We can successfully compete in the United States with foreign productions of the same grade with the present duties, but cannot do so abroad.” (Publications, art books, etc.)

[28] "Yes. We can sell lower than the Germans, who are the best." (Art photographs.)

[34] "We surpass the world in this matter. In pure line bank note engraving, geometrical lathe work, and small picture work, we have no competition." (Steel engraving.)

[37] "They do not work in a similar manner. I think we could compete with them in their grade, and will soon. The Germans are far ahead in large work. We produce artistic work and follow the artist's study. The English is coarse, but better drawn usually." (Wood engraving.)

What medals, awards, or diplomas have you received?

Twenty-two reply, none. Most of these have never exhibited. Three have received gold medals from the Massachusetts Charitable Mechanics' Association; 2 have silver medals and 1 a bronze medal from the same; 1 has received gold and bronze medals from various exhibitions; 4 have "several medals"; 1 was awarded a diploma at the Paris Exposition of 1878; 1, a diploma from the Massachusetts Charitable Mechanics' Association; 1 obtained honorable mention and third medal at the Salon exhibition (Paris), 1883, and silver and gold medals from the Massachusetts Charitable Mechanics' Association; 1, a gold medal from the Massachusetts Charitable Mechanics' Association and the first prize at the World's Exposition at New Orleans, 1885; 1 received medals at the Centennial, Chilian, and other expositions; 1, a bronze medal at the Centennial, also silver medals from the Massachusetts Charitable Mechanics' Association; 1, medals at all leading exhibitions, native and foreign; and 1 received the first prize wherever exhibited, including gold, silver, and bronze medals, and diplomas at all principal exhibitions.

Do you employ American or foreign talent?

Thirty-one employ American talent; 8 both American and foreign; 2 foreign talent only.

Have you any trades journals?

Twenty-nine answer yes; 12 reply no.

Do you use foreign or American material in your products?

Twenty-six use American material only; 4 foreign only; and 11 use both American and foreign.

Remarks in general.

Under this head the schedules contain statements relating to the general subject under investigation, the more important of which we present :

[2] “ We slight our work. That is, American glass makers do hurried orders in competition, and thus cheapen quality. As yet the standard of highest excellence seems to have had no ambitious followers. Abroad poor glass is rarely made. If it is, it is destroyed, there being no market for it. * * * There is every prospect that the next ten years will develop new results to the credit of our glass industries.” (Colored glass.)

[3] “ We can decorate and furnish a house more artistically, and at far less expense, than can be done on the instalment plan.” (Interior decorations.)

[4] “ In ornamentation and style our work has greatly improved. The best, so far as I can see, is being done now. In finish our goods are perfect. Many of our bridles are adorned with bright fabrics. Robes and blankets are richer in color, and hardly more costly than the old styles. Our windows are more tastefully decorated, and the business is carried on in better shape than formerly.” (Leather harnesses and saddlery.)

[10] “ We are raising American workmen who will soon learn and work as well as the Swedes and who are more industrious and temperate. Ten years from now we shall need no foreign workmen.” (Wrought iron art goods.)

[11] “ Were there no duties on foreign work we could easily compete since our work is so evidently superior. We consider art education a great possibility for the future of art in America.” (Wrought iron art goods.)

[12] “ We reproduce objects from nature, such as leaves, vines, and flowers. They are used in dadoes, panels, plaques, and friezes. * * * Imitations don't pay so well as new ideas.” (Bronze art goods.)

[14] “ It is interesting to look over a large assortment of European novelties and American wares of the same grade. From an artistic standpoint on smaller goods I think the American product superior.

Certainly we have eclipsed the foreign in household goods in brass, such as fire-place work. In hand-painted porcelains and medallions we equal foreign work. European makers are using every endeavor to flood our market with their best work, so as to keep down American products, but the more we get from Europe the more the demand, and the greater the demand the greater the impetus given to American makers. Protection affords us an opportunity to develop, and if ever free trade opens in this country we shall be ready to compete in design and material, but not now." (Brass and metal art goods.)

[19] "The English and French are fair silver workers, but the leading American manufacturers lead the world and do a great export business. We are imitated abroad. The English makers are too clumsy, the French too frail." (Silverware.)

[20] "The fashion is English just now, and is likely to be so, because they go to nature for their designs. The Germans do the same, though they are more conventional. The French used to lead the world, but the Franco-German war broke up their business. At that time the Germans were employed in the French factories, and after that, having left France, they never returned." (Paper hangings.)

[21] "There are growing up many students who will soon become good modellers, and home talent will be plenty insomuch that we shall not have to look abroad for art workmen." (Plaster casts.)

[22] "We make fancy flowerpots, etc. The plain ones would have answered twelve years ago." (Pottery.)

[23] "Color seems to be the demand of the American people; form comes secondary. I have been successful in obtaining colors equal to the antique china. The demand for fine work has grown steadily since 1877. I have visitors interested in pottery call every day. I think the future will develop grand results." (Pottery.)

[26] "Our forms are varied and ever changing. We keep a person in Kensington Museum and School looking out for new ideas, and adapt them to our wants." (Decorative cards.)

[31] "In design and execution of work we more than equal our foreign neighbors. In the highest realms of art we are not their equals, but we are fast reaching the point when we shall be. As an industry, art goods of all descriptions, small and great, are made in our State. Everything now-a-days must be artistic." (Lithography.)

[36] "There is an idea prevalent that engravers are mere copyists. Experience has taught us that the ruling machine in the hands of a skilful engraver can be used with such a degree of intelligence that the artist workman paints his ideas on steel, much the same as the painter does on canvas. We do not need to use the etching point. Our work was a surprise to the English and French engravers who fail to get the results we do. We obtain a broad and expressive result, and with the improved methods of printing (dry) our facilities are very great over those formerly used. Our art benefits all classes. Every person has something of the steel engravers' work in his pocket. It is on the bill head, the table menu, the church certificate, railroad bonds, diplomas, cards, pictures, railroad tickets, in the mill, house, and on the street. We think that with wood engraving we have done as much as any other medium in raising the standard of art. The engraver must give color effect with black lines. The handling of the steel plate must be productive of light, shade, and finish; must be clear, modelled with skill, and be a fine interpretation of the idea of the artist. The public are quicker to understand engraving than painting. Engravings are printed facts and the people read print better than color, though they love color. We aim to obtain the etching, dry point, and graver's effect by using the ruling machine, this machine giving us freer and more open work, and greater truth and firmness." (Steel engraving.)

[37] "Wood engraving has made an advance in one direction during the past ten years, namely, in the care taken to follow the original. While there is absolutely less original engraving there is more abundance of fair work within the reach of all. In stipple and pure line there is little done of value to what there was 30 years ago." (Wood engraving.)

[41] "The age demands the highest skill in wood carving. Our people are becoming acquainted with what is good, and even in small carvings for ordinary furniture the standard is far above what it was ten years ago." (Wood carving.)

There are certain industries growing out of the combination of the photographic art with that of the lithographic printer that have made great advances in recent years, and have to a degree assisted the art education of the people. We refer particularly to the various photo-reproductive processes by means of which results are obtained in many respects equivalent to, and in some

respects surpassing, those obtained by handwork with the graver and etching point.

Among these processes are photo-relief engraving, photo-etching, the Albertype and the Heliotype. Photo-relief engraving, a specimen of which appears opposite page 344, is adapted to the reproduction of all kinds of black and white line work, such as pen and ink drawings, etchings, and engravings. The Albertype and Heliotype are particularly adapted to the reproduction of landscape and portrait photographs, paintings, and drawings finished with the brush. We are not able to present an example of an Albertype, but a Heliotype appears opposite page 360. The photo-etching process has a similar range to those described. An example appears opposite page 376. The uses, and the artistic and economical results of the introduction of these processes, are sufficiently indicated in the following extracts from the schedule replies :

“ It is about ten years since we took this process, and our business is growing very large. New chances have opened for our process. Publishers of art books, and anyone requiring an illustration of portraiture, be it of the human figure, or still life, or machinery, finds it to his advantage to use our reproductions. We can produce maps, black and white line drawings, or similar work. We have a list of many hundred works that can be sold and framed for one dollar, the greatest artistic works being thus brought within the reach of the poor. We have superseded wood engraving to a great extent. Our work is superior to ordinary chromos, and we copy exactly fine works at reduced prices, say 50 per cent less than originals can be obtained, and thus educate the people beyond cheap stuff. There is only one process like ours abroad, and we produce cheaper and better work. The duties prevent competition, and if there was free trade between the countries we should still be able successfully to compete.”

“ We have had our process two years, and have published a large volume of reproductions from German masters' works, also other works. Catalogues, illustrations of all kinds, including mechanical reproductions, afford a market for our work. Reproductions have changed the artistic sentiment of the people, by showing the texture and qualities of fine works of art, and educating them up to the knowledge of good things. In the mechanical finish of a plate the Europeans may have a very slight advantage, but we shall acquire sufficient facility with practice. The achievements of our process

have been remarkable, and in a little time we shall show vastly better work. The demand for reproductive work of our grade and style is growing, and is beyond our ability to produce it satisfactorily."

"The commercial, artistic and publishing community furnishes a market for our products, and by our process the reproduction of rare and costly works of art at a cheap rate spreads the knowledge of art amongst the masses, and the best examples of art are brought within their reach. Our work can be done cheaper, but, on the average, no better abroad. We have received many medals in gold, bronze and silver at all the leading exhibitions. We have a number of processes, each adapted to a peculiar class of work, also a process for producing chemical fac-similes of autographs, plans, drawings, etc., and a photolithographic process largely used in the reproduction of line illustrations, documents, books, maps, architect's drawings, and scientific plates."

"We were engaged several years before reaching successful results, and are still progressing. Commercial and art dealers furnish a market for our products. They reach the poor quite extensively. We take the place of line engraving, and we can give better general satisfaction to painters who desire to have their work reproduced than is afforded by hand engraving, and can do it at fifty per cent less prices. In its effect upon the artistic sentiment of the people our process is educational, bringing artistic work within their reach. We can successfully compete with foreign producers, and are exporting our work. We have no foreign competition. We show the artist's drawing or painting exactly, bringing all things artistic before the million."

In regard to chromo-lithography it may be said that in Christmas cards or small fine work our producers successfully compete with the world. We do more, we make the highest grade of work in this line both in color and design, our designs being used by foreign houses. Artists abroad make designs for our producers, but the larger part of our work is of native design, while in artistic rank our designs excel those produced abroad, and are copied by English, French, and German firms. This class of work can be manufactured abroad considerably cheaper, but is inferior to ours. This is proved by the price of foreign and domestic cards sold at retail in our markets, our cards bringing much higher prices and still being in greater demand. We also compete successfully with foreigners in

chromo-lithography in some grades of large work, but, generally speaking, in large reproductive work we cannot as yet successfully compete. The best talent to be found is utilized in coloring and drawing, and our large work is often superior to foreign work, but costs very much more. Some of the materials used are only to be obtained from foreign sources, although the paper is of American production. It may be said that the chromo has in many respects been a great educator, and has stimulated our people to advance more rapidly in art. Next to the chromo comes the engraving, and lastly the photoprocesses, the results of the latter coming into active competition with the former. The labor employed in the production of chromos in this country is today largely foreign, but the art element involved in them is chiefly American. In chromo work and steel engraving of the new school, as well as in bank note work, certain Massachusetts firms have a deserved pre-eminence and world-wide reputation.

EDUCATIONAL FACILITIES.

Massachusetts, since 1870, has recognized the importance of training the pupils in the public schools in industrial drawing. By the statutes of that year, chapter 248, drawing was made one of the branches required to be taught in every town.

In 1873 the Legislature authorized the establishment of a Normal Art School, which has since been conducted as part of the normal school system of the Commonwealth. Its purpose is two-fold; first, to provide efficient teachers in order to supply the demand for trained instructors in the public schools, and secondly, to afford instruction in the arts of design, and thus aid the industrial development of the State. The school has been successful, and is today organized upon a practical basis. Such subjects as the following are embraced in the curriculum:—the reproducing arts; methods of working terra cotta; the ceramic arts, their materials and process of manufacturing; stained glass, its origin and history, and best style of design; practical lessons in the enrichment of porcelain; principles governing design in cast and wrought iron; origin and progress of architecture, with architectural design; and manual training. In each case, “the history of the art, its develop-

ment, its bearing upon industrial and commercial interests, the technical manipulation of the material employed, and an exhibition of the processes peculiar to it, are all embraced in the plan of work." This application of the elementary knowledge gained in the school to various practical arts is a new departure, undertaken for the purpose of increasing the usefulness of the school. The curriculum of the school embraces all subjects necessary to qualify the pupils to become teachers of drawing, and covers a course of four years. While the work of the school was progressing satisfactorily, it was felt that something ought to be done to more directly influence the teaching of drawing in public schools throughout the State, and to this end a competent adviser upon the subject of instruction in drawing, who is connected with the Normal Art School, is prepared to visit gratuitously any city or town desiring his services, to explain to school authorities and teachers the best methods of organizing and carrying forward the work contemplated by the statutes. In order to provide more fully for the needs of the school, the Legislature of 1885 authorized the erection of a building to be entirely devoted to its purposes, and appropriated therefor the sum of \$85,000. This building is now in course of erection.

Besides this school, the Massachusetts Institute of Technology, in Boston, and the Worcester Free Institute of Industrial Science are especially devoted to industrial training, including the arts of design. Connected with the Institute of Technology is the Lowell School of Practical Design, which in 1872 was founded by the trustees of the Lowell Institute for the purpose of promoting industrial art in the United States. The corporation of the Institute immediately assumed the responsibility of conducting it, and the first pupils were admitted in that year. Tuition is free to all pupils, and the course of instruction extends over three years. The training of the pupils in design is effectively supplemented by the opportunity afforded them of working their designs into actual fabrics of commercial sizes, and embodying every variety of material and texture. Elementary instruction in drawing is not one of the objects of this school. It devotes itself to advanced drawing, composition, and design. Elementary knowledge of drawing, especially free-hand drawing from nature, including skill in the use of the

brush, is required for admission. It appears from the last catalogue of this school that it has met with great success. That document states that "the total number of students who have been connected with the school since its establishment is 499; of these, 243 were young men, and 256 young women; 135 have carried their studies so far and so successfully as to receive certificates of proficiency, and have filled situations in connection with manufactures, or have undertaken professional practice; of these, 89 were young men, and 46 young women. The branches of manufacture in designing for which the graduates of this school have been engaged are prints, carpets, oil-cloths, wall-papers, the decoration of glass and china, lithography, and weaving. The number of students connected with the school during the present year (1885) has been 61. Of these, 5 have left the school at various dates during the year to accept situations offered them. Of the 56 students remaining, 27 were connected with the school during the year 1884-85."

The number of students who can be admitted to the department of design in this school is limited. For instance, during the coming year it is not possible to receive more than five new pupils in the designing room, and about ten in the textile design department, provided those who have already been accepted elect to remain. It is especially required of applicants who propose to enter the school, that they shall possess aptitude for the work of composition and design, and only such students are retained after a fair and patient trial. Inspection of the list of graduates of this school brings out the fact that most of them are occupying good positions as designers, or as teachers in drawing and design.

In the cities that are particularly connected with the industrial prosperity of the Commonwealth, instruction in industrial drawing has been liberally provided, and has not been limited by a merely nominal compliance with the statutory requirements.

In Lawrence all pupils, from the initial primary grade up to and including the first year in the high school,—ten years in all—have as efficient training in drawing as in any other branch. After the first year in the high school the study is optional, but many pupils continue it. Besides this, the city has maintained for more than ten years evening drawing schools from October

to April, devoted to instruction in geometric, machine, free-hand, and architectural drawing. These evening schools are well attended. In the day schools the instruction is given by the regular teachers, directed by a graduate of the State Normal Art School, who personally conducts the teaching in the high school, and a portion of that in the evening schools. We are informed that the results of these schools are excellent, and in the opinion of the superintendent the importance of the training cannot be overrated.

In Lowell the sum annually appropriated for free evening drawing schools, which of course supplement the regular work of the day schools, is \$4,500, although the sum usually expended exceeds this amount. Last year the attendance upon these schools was as follows:—freehand class, 243; modelling class, 124; architectural class, 78; machine drawing class, 96. Six male and six female teachers are employed. Excellent work of a practical character is done in the class of design, and indeed in the other departments. A graduate of the Normal Art School has supervision of the work. It is thought probable that in the future a building may be devoted exclusively to drawing school purposes.

In Fall River freehand, mechanical, and architectural drawing is taught in free evening drawing schools during the Fall and Winter months. About \$1,200 is annually devoted to this purpose. The freehand class is usually larger than the others. Last year the total membership was about 142, and the average attendance about 60. The mechanical class had 54 students, and an average attendance of 23; and the architectural class had a membership of 19, and an attendance of 11. The teachers of the mechanical and architectural classes are graduates of the Institute of Technology. The teachers of the freehand class have attended art schools. The superintendent of schools in this city is a firm believer in this kind of instruction, especially in manufacturing places, and is of the opinion that the results obtained in his own city have been quite satisfactory.

In New Bedford a great deal of attention has been given to instruction in drawing, and the principal teacher in this branch acquired his training in one of the permanent art schools in England. The superintendent of schools states that, “under his training the pupils made rapid improvement, and developed

in the higher stages of their progress such a mastery in the handling of the pencil and brush in the arts of design, as procured many of them employment in establishments requiring talent of that character. We have various industries the special beauty and value of whose products are derived from the arts of designing and coloring, and the creative effects of freehand skill, and they give employment in the aggregate to hundreds of those whose emolument depends upon the degree of their artistic proficiency, and there is not a boy or a girl in our schools who exhibits special ability in drawing, who is not in request long before the allotted time of schooling is over. Graduates of our day and evening drawing schools * * * have gone to institutions affording greater advantages than we can give, and have finally secured excellent remunerative situations. * * * Drawing, therefore, is proved to be the most immediately practical of all the studies in our schools, and if it should be abandoned or greatly restricted it would correspondingly abridge the means of livelihood of large numbers of our youth. The evening adult school has done appreciably good service in this direction, but it will not compare with that accomplished by the public day schools. * * * I am not prepared to suggest any plan by which industrial art training may be fostered any more adequately than heretofore; I can only say under the stimulus of the splendid results which have followed this work in our own schools, let it be fostered with all the agencies and appliances which can be brought to bear."

In Taunton the free evening drawing school has the usual departments, with an average attendance of 211 pupils. The superintendents of the mechanical institutions of the city report that the artisans who have been educated in this school are worth on the average 25 per cent more than those without such training. The superintendent of schools states that this sort of instruction is popular with the citizens, and that the city appropriates about \$1,500 annually for the expenses of the school. Besides this, drawing has a regular place in all the grades of the day school course.

In Brockton drawing is taught to evening classes by teachers who received their education at the Normal Art School. It has also its place in the curriculum of the day schools.

In Worcester drawing is made a regular study in the gram-

mar schools throughout the course. We quote the following particulars from a report by the superintendent of schools :

“The eye is trained to see forms, the details of objects and their relations; the mind is trained to judge of size, distance, length, both relative and absolute; and the hand learns how to handle a pencil so as to make a rude representation of things. From the most elementary stage to the completion of the course in the high school, this study is carried on in three parallel lines: copying from the flat, drawing from models, and original design. Designing by the pupil from its first simple steps to something more complete in the higher grades develops an originality in many a pupil which would otherwise remain dormant.”

The free evening drawing schools in this city have been remarkably successful. The course includes elementary and advanced freehand drawing; historical ornament; theoretical design; perspective; instrumental drawing for carpenters, woodworkers, pattern makers, and machinists. Two hundred and twenty-three pupils were registered in the evening class during the year ending December 1, 1885, 182 being males and 41 females. The average number belonging to the schools was 192, and the average attendance, 161.

The teacher of freehand drawing in the evening schools has received a thorough art training in this country and abroad, and the other instructors are competent specialists. The special teacher of drawing in the public schools and his assistant were educated in the Normal Art School.

In Springfield freehand drawing is taught in the grammar and primary schools, and as an optional branch in the high school. In the primary class clay modelling is practised. The city also maintains a free draughting school affording instruction in mechanical, bridge, and architectural drawing during five months in each year. “The object of this school is to teach mechanics, and others, branches of industrial drawing not taught in the day schools; embracing the principles of instrumental drawing used by designers, decorators, architects, machinists and engineers.” The superintendent considers “these schools one of the best features of our industrial system. They are very popular and are patronized by people representing the great variety of interests for which our city

is well known. * * * Quite a number of professional draughtsmen, teachers of drawing, house decorators, etc., have gone out from our draughting school."

In Lynn drawing is taught in the day schools and in an evening drawing school. Four teachers are employed in the latter, the average attendance of pupils being about 150. The director of drawing reports that "the educational and industrial value of drawing and its importance in the way of manual training are more and more appreciated by our citizens each year. The people generously support special instruction in drawing. * * * According to my observation no subject in our public schools is taken up with more interest than drawing from the lowest primary to the highest grade."

In Haverhill, besides the instruction in drawing given in the day schools, a free evening drawing school is maintained in which mechanical drawing is taught. The teachers have been educated in art schools in Boston, and the principal is a graduate of the Institute of Technology. The superintendent of schools expresses himself as "a thorough believer in this department of instruction in our schools. If taught correctly it trains perception, observation, the conceptive powers and reason; gives skill to the hand and promotes correct taste."

We have noticed the chief industrial cities of the Commonwealth. Many of the industrial towns, as well as the other cities, in the State are endeavoring to supply adequate instruction of the kind described.

In Boston free evening industrial drawing schools continue from October to March. The whole number of pupils is about 480, the average attendance being about 90 per cent of the whole number enrolled. The director of drawing says :

"The mercantile appreciation of this instruction can be found in the advanced pay and better positions which many of these pupils receive. They become through their study in this department more skilled and consequently can command better remuneration for their labor than can those who have not received similar training. I recall an instance of a man who has risen from the bench of a machine shop to the position of head draughtsman in a large establishment, entirely on account of the training given in these free drawing schools, he having had no previous knowledge of the subject. Other instances of the kind are by no means uncommon.

Many of the students are occupying positions as draughtsmen and designers of decorative art work."

Among educational influences should be mentioned the work of the Boston Society of Decorative Art, organized in March, 1878. The objects of this society, as stated in its report, are :

"To raise the standard of design and execution in hand-wrought work, to create and teach skill in artistic industries, especially in needlework, to give instruction and employment in its rooms and elsewhere to many persons who can earn much or all of their support by such handiwork, and to exhibit and sell the same in the rooms of the society."

The society is now firmly established and has done much to realize its aims. It paid to contributors during 1885 for articles of art workmanship received to be sold, \$7,940.50. It also paid to workers in its immediate employ, \$2,878.62. Work accepted by the society from contributors must reach a certain standard of artistic merit, and the "high standard of the society in design and execution has stimulated the best class of work, and discouraged inferior contributors ; it has led to the survival of the fittest." The number of workers in its rooms have increased each year. "It is to be expected that the articles made in the workrooms should excel in taste and in execution those sent by the contributors. The effect of direct guidance and constant instruction is apparent in the beauty of the work done under the superintendence of an accomplished teacher. But this very difference in merit leads to good results. It is desirable that poor performances shall be discouraged ; the better contributors are urged to greater efforts ; and the standard of the society is best appreciated by observing the character of its own productions."*

The influence of the work performed by the society has extended to other cities, and is believed to have materially assisted in raising the standard of artistic work.

Among the conclusions to be gathered from the schedules received are the following :

* Seventh Annual Report of the Society.

It appears that in many lines of production manufacturers are impressed with the necessity of incorporating art with industry in order to meet the demand arising from the increased interest in art in all classes. It also appears that the tendency is toward original work rather than the reproduction of foreign designs; that patronage is not by any means confined to the wealthy, but springs from all classes of society, and that in the production of fine goods our manufacturers can, in most instances, easily compete with foreign products, and their sales tend to decrease foreign imports. This could not be said until recently. American designers in certain lines can equal foreign work.

In articles of bric-a-brac and household adornment the greatest success has so far been gained in small things; while in the production of large and important articles the European producers excel those in this country. In those industries which largely partake of the art element, such as wood and steel engraving, lithography, and photo-engraving, our work is fully up to the foreign standard, and in many respects passes beyond it. This, of itself, indicates a popular art feeling, as such progress could not have been made without popular support and patronage.

The influence of success in one industry upon others more or less connected with it is noticeable; for example, the success of one manufacturer in the production of new and improved effects in tiles stimulated designers and artisans throughout the country to emulate his work. [See reply numbered 40, page 373.]

The requisite talent, then, appears to be forthcoming whenever demanded to enable Massachusetts manufacturers not only to equal foreign producers of artistic goods, but to surpass them upon their own ground. Not many years have passed since the American markets were supplied with such products almost entirely from foreign sources. What Massachusetts has accomplished in certain directions she may easily surpass in others, if her manufacturers desire. The demand for artistic production is increasing, and may be met by our workshops and factories by the exercise of proper foresight.

The results of the present investigation show that a substantial basis exists for the development of the industries of Massachusetts in the direction of art, and that public sentiment

in our industrial centres is favorable to such a development, and to aiding it, so far as possible, by affording a thorough training in industrial drawing and design as part of the work of the public schools.

As stated at the outset, the present investigation is tentative merely, but it is believed that sufficient information has been presented to indicate the importance of the subject and to stimulate further inquiry.

